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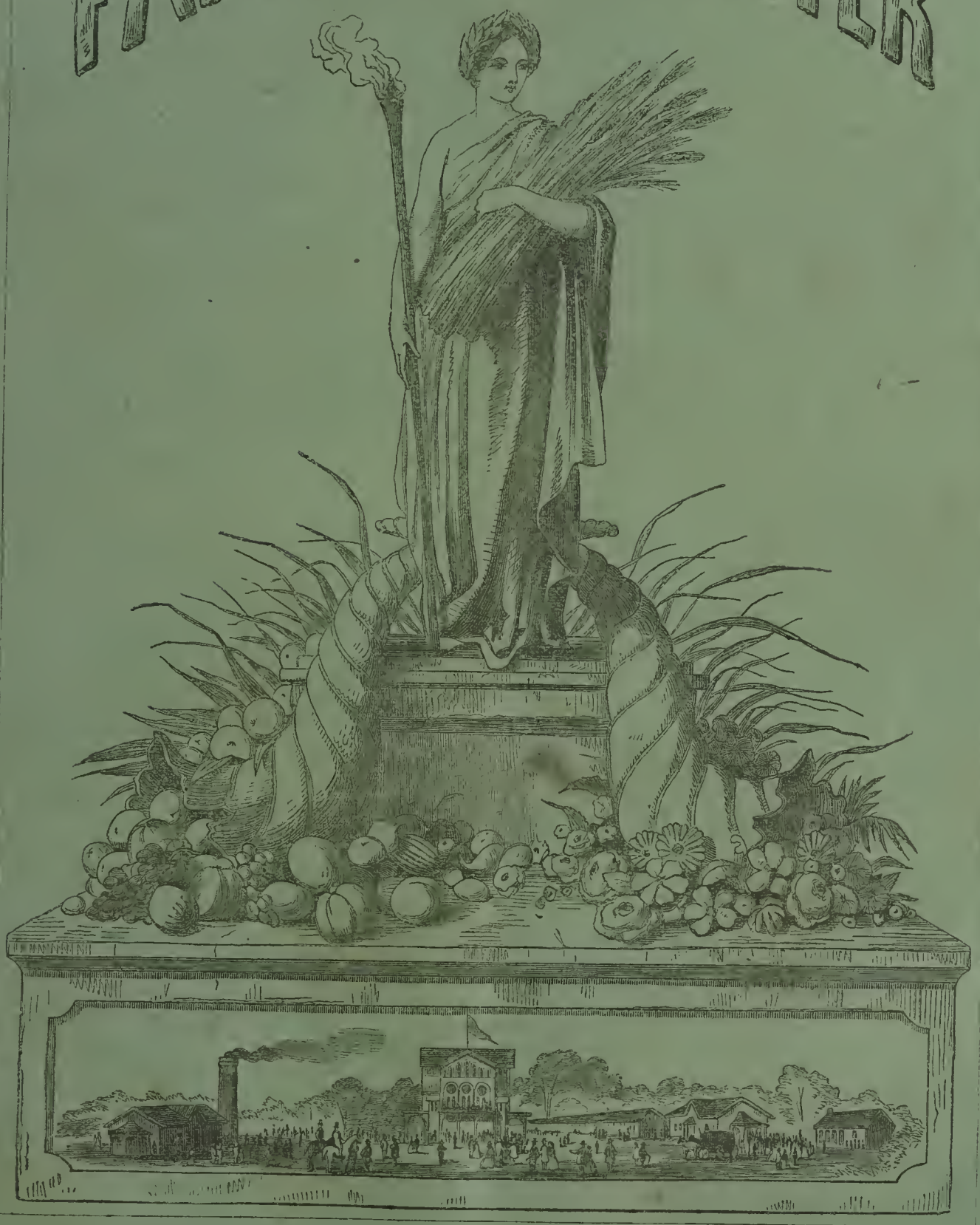
THE FARMER AND PLANTER



PRICE, $1 A YEAR, ALWAYS IN ADVANCE.

CONTENTS OF SEPTEMBER NUMBER.

CROWDED OUT.

Just before putting our cover to press the advertisements which appear on the cover and advertising sheet was received, crowding out the publisher's *monthly talk with his patrons*. We feel confident our friends will not grumble, as it is an evidence of increase of business with the *Farmer and Planter*.

OUR FRUIT COMMITTEE ROOMS.

But few specimens have been exhibited for inspection, and those alone from our friend Dr. ROACH, who sent us a specimen of very superior Apple, which he calls the August Prize, and it really is a prize apple; large, mellow, with firm flesh, beautifully striped skin, and equally good for cooking or eating. We have not room to specify the remarkably fine grapes and peaches the DOCTOR sent us, but will do so next month.

VOL. XI. SEPTEMBER, 1860. NO. 9

R. M. STOKES, Proprietor. COLUMBIA, S. C. NEW SERIES Vol. 2, No. 9

GENERAL CONSIDERATIONS ON MANURES.

By Samuel W. Johnson, *Chemist of the Connecticut State Agricultural Society.*

(concluded.)

COLOMBIAN GUANO.

This substance is memorable for the singular errors into which several chemists fell in reference to its constitution. When offered for sale here in 1855, the dealers advertised it as a natural *superphosphate* of lime, publishing certificates of analysis by several well known chemists. These after stating the amount of bone phosphate of lime present, gave estimates of *free phosphoric acid* varying from 5 to 11 per cent. of the whole weight of the guano. The simplest test were sufficient to show the incorrectness of these statements. For example, the watery solution of the guano was neutral to test paper; it never contained, even after boiling a few minutes, one per cent. of phosphoric acid, and what it did contain was invariably combined with lime. I determined to ascertain, if possible. the cause of this mistake, and in order to this end undertook a minute analysis of the article. My results enabled me to announce its true constitution, and to show that the lime existed as the neutral phosphate, consisting of two atoms of lime, one of water, and one of phosphoric acid, instead of bone phosphate, which has three atoms of lime and one of phosphoric acid. The error was occasioned by overlooking this.—The following table expresses my results:

Moisture,	2.34
Organic matter and water combined,	8.95
Phosphate of iron,	0.35
Phosphate of magnesia,	0.61
Lime,	38.75
Phosphoric acid,	46.22
Sulphuric acid;	1.96
Chlorine,	free
Sand,	0.63
	100.81

Upon calculating the results, some lime will be found over and above the exact amount for the neutral phosphate. This I take to be combined with one of the acids of the humic group, because the substance effervesces with acids after ignition, but not in its original condition. I believe the following table correctly expresses its composition:

Natural phosphate of lime,	87.95
Sulphate of lime,	4.21
Lime combined with organic matter,	1.47
Organic matter,	2.29
Phosphate of iron,	0.35
Phosphate of magnesia,	0.61
Chlorine,	trace
Sand,	0.63
Moisture,	2 34
	100.85
The phosphoric acid is equivalent to bone phosphate of lime,	100 14

After the publication of these results, Drs Higgins and Bickell published a paper on the same subject: They pointed out some interesting facts which had escaped my observation. It will be remembered by every one who has seen this guano in its natural state, that it has a glazed surface of a mammillated form which is a mere shell covering, of a dark brown compact mass. The latter was the portion I examined. They studied the surface also, and found that in it, the phosphate of lime exists in the form of bone phosphate, while they arrived at the same conclusion with myself in reference to the body of the rock.

The first guano of this kind was found upon the surface of primitive rocks on Monk's Island, in the gulf of Maracaibo. Afterwards, it was discovered on El Rogue. A substance closely resembling, but not identical with it, has been recently brought in from El Monita. The cargoes of this guano do not come up to the samples, because they contain a large proportion of the rocks of the islands. Still, they furnish the largest amount of phosphoric acid in a given weight of material, and that, too, in a remarkably soluble form: The only difficulty is, that this variety is scarce.

SOMBRERO GUANO.

This guano is the most abundant and uniform source of phosphoric acid now known to commerce. It is incorrectly called a guano, as it is evidently not originated from the exercments of birds, but is clearly a submarine deposit. I am inclined to think that it is made up of the bones of marine animals, and the exerements of fish and mollusca that feed among the coral reefs. It is composed of phosphate of lime, mixed with some carbonate of that earth, as well as the phosphate of magnesia, iron and ammonia. It contains a very small quantity of sand and not much organic matter. It is quarried like a rock, and requires to be ground before it is applied

The following analysis will show its constitution and exhibit its remarkable uniformity: They are all cargo samples, Nos. I, and II, having been imported into this market in the fall of 1858; No: III, being the sample of a cargo taken by the purchasers as it ran through the mill at Petersburg, Va., in the spring of this year I sampled No. I, myself, in the store house, after it had been ground. I have, moreover, another analysis of special samples, which have been either sent on from the island, or selected from the vessels here, but as these are the only *full* analyses of cargoes I have made, they will probably convey a better idea of the average production of the island. A number of determinations of phos. acid and lime in cargo samples give parallel results:

	I.	II.	III.
Water and organic matter,	7.07	7.07	42.27
Lime,	44.66	41.52	40.27
Magnesia,	1.56	0.35	1.07
Alumina,	4.97	4.13	4.67
Sesquioxid of iron,	2.03	4.97	
Alkalies,	0.81	0.81	
Phosphoric acid,	34.66	36.80	35.62
Chlorine,	0.35	0.35	
Carbonic acid,	2.80	2.92	
Sand,	0.69	0.69	0.51
Not estimated,			5.59
	99.59	99.61	100.00
Phosshoric acid equivalent to bone phosphate of lime,	75.04	99.61	7.55

As an additional evidence of the character of this guano, I subjoin a copy of an analysis by Professor Campbell Morfit, of New York:

Water,		3.52
Sand,		.68
Organic matters with lime		12.33
Chloride potassium,		.09
Sulphate lime,		.86
Bone ash, Bone phosphate lime,	67.06	64.67
" " magnesia,		2.39
Phosphate alumina		3.62
" iron,		1.95
Carbonate lime,		5.34
Silicate potassa and lime,		.76
Oxide iron,		1.10
Alumina,		3.13
		100.44

The total amount of phosphoric acid is	34.06
Equivalent to bone phosphate of lime	73.93

NEVASSA GUANO.

This material is in small red pebbles, usually rounded, resembling gravel. I have made but a single full examination of a sample, which gave—

Organic matter and water, with some carbonic acid,,	12.72
Sand,	4.11
Lime,	29.66
Alumina and sesquioxid of iron with a little magnesia,	21.50
Phosphoric acid,	31.66
	99.60
Phosphoric acid equivalent to bone phosphate of lime,	68.49

The sample from which the above analysis was made, was made perfectly dry.

IRON GUANO.

Early in 1857, a large number of rocks, supposed to be identical with the Colombian guano already described, were brought into the United States, mainly through the ports of Baltimore, Philadelphia and New York. I never saw any reason to consider them guanoes, they being chiefly composed of Wavellite, mixed with variable quantities of phosphate and sesquioxid of iron. The following table expresses their composition: No. I is a pale phosphate from Testigos; No. 2, a red rock from the same island:

	I.	II.
Water,	21.05	16.74
Sesquioxid of iron,	4.85	12.96
Alumina,	22.11	20.91
Soluble matter,	17.55	7.74
Phosphoric acid,	33.65	40.45
Sulphuric acid,		.02
Chlorine,		.12
Phosphoric acid equivalent to bone phosphate of lime,	72.91	87.64

Both the samples contained flourine, which was not estimated. These phosphates were deemed here as worthless, because they had not a lime base. I never could see any good reason for this opinion, especially, as I proved, by actual experiment, that their phosphoric acid was rapidly dissolved by the alkaline silicates, which are, of course, present in every soil capable of producing wheat or corn.

El Monita Guano.

Several samples of hard guano have been recently brought in from the island of El Monita: They somewhat resemble genuine Colombian guano in their external surface, which is white, smooth and mammillated, but differ from it in their general structure, which is scaly, so that they readily split up in parallel layers: They appear to contain a mixture of the two phosphates of lime in varying proportions: The amount of sulphate of lime differs greatly in different samples; and this difference causes a fluctuation in the per centage of phosphoric acid: The following table expresses the composition of the first sample which I examined:

Water and organic matter,	12.28
Sand,	0.86
Lime,	35.06
Magnesia,	2.99
Phosphoric acid,	27.78
Sulphuric acid,	17.61
Not estimated,	3.79
	100.00

I suppose these substances to be combined as follows:

Mixed Phosphates of Lime,	46.18
Phosphate of Magnesia,	8.65
Sulphate of Lime,	35.41
Sand,	0.86
Organic matter,	5.11
Not estimated,	3.79
	100.00

Equivalent of phosphoric acid in bone phosphate of lime—60.17.

That these proportions vary materially will be perceived, when I state that another sample of a similar rock from the same island, brought in by the same schooner, and examined for phosphoric acid and lime, contained of

Lime,	33.75
Phosphoric Acid,	42.83

in the hundred parts.

Equivalent of phosphoric acid in bone phosphate of lime—92.80.

Some stalagmites, of a conical form and mammillated surface, were brought in at the same time from the same island. I examined a sample of one of these, with the following result:

Water and organic matter,	15.73
Sand,	1.34
Lime,	36.45
Phosphate of iron,	2.68
" " magnesia,	6.22
Phosphoric acid, combined with lime,	24.96
Chlorine,	0.29
Sulphuric acid,	9.15
Not estimated,	3.18
	100.00

Of the ammoniated guanoes I have not made so many analyses as of the phosphatic. I am convinced, however, that the assumed uniformity of Peruvian guano, as imported here, does not rest upon a basis of fact. I have analyzed one sample which contained 18.53 per cent. of ammonia. The last sample I examined gave me only 11.40 per cent. of ammonia, and it certainly presented no appearance of having been damaged on the voyage.

California Guano.

There have been various articles brought in under this name. Usually they are very wet and dark colored, when, of course, their per centage of ammonia is low. The following table expresses the results of my analysis of the first cargo brought to this port, and probably represents the average composition of this material:

Moisture,	15.63
Combined water, organic matter, and ammoniacal salts,	51.04
(Containing ammonia, 10.17.)	
Lime,	6.11
Phosphoric acid,	11.91
Sand and gravel,	3.68
Not estimated,	11.73
	100.00

An examination for ammonia of a sample reeently sent me gave me only 3.46 per cent. of that alkali. Another sample, which I reeeived about two months since, and of which I made a commercial analysis, gave me the following results:

Water and organic matter	38.45
(Containing of ammonia, 6.35.)	
Sand and gravel,	16.10
Lime,	15.55
Phosphate of magnesia,	4.61
Phosphoric acid,	16.29
Not estimated,	9.00
	100.00

I have examined other ammoniated guanoes from Yucatan, Africa, Patagonia, the Galapagos Islands, and other points, chiefly in the Pacific Ocean, but as they are not articles of commeree here, I shall not trouble you with a description of them.

Very respectfully, yours, &c.,

A. Snowden Piggot.

I also avail myself of some of the analyses of Prof. S. W. Johnson, the results of which are just published, under the title of "Peat, Muck, and Commercial Manures."

1.—Peruvian Guano.

ANALYSES OF FOUR SAMPLES.

	1.	2.	3.	4.
Water,	66.32	65.18	12.63	12.70
Organic matter,			52.27	51.46
*Ammonia potential,	5.82	5.95	16.03	15.98
" actual,	8.93	9.08		
Phosphoric acid, soluble in water,	4.69	3.64	15.19	14.08
" " insoluble in water,	10.05	10.05		
Sand, etc.,	1.69	1.52	2.45	2.66
Phosphate of lime equivalent to the total of phosphoric acid,	(average)	21.28		31.69

* By the term "potential" ammonia, Prof. Johnson means that which will be produced by further chemical changes, in addition to that already existing.

California Guano (Elide Island).

In Prof. Johnson's book are recorded four analyses. Nos. 1 and 2 by himself, 3 by Dr. David Stewart, of Annapolis, and No. 4 by Dr. Deck, of New York.

	1.	2.	3.	4.
Water,	27.34	27.60	18.90	22.64
Organic and volatile matter	39.20	38.75	43.30	43.53
Ammonia,	10.00	10.06	9.39	11.46
Phosphoric acid, (soluble,)	5.07	5.31	} 11	
" " (insoluble)	6.66	6.25	}	
Sulphuric acid,	4.94	4.94		
Lime,	9.67	9.36		
Potash and a little soda	2.50	2.50	9.60	
Sand, etc.,	2.50	2.52	4.70	3.24

Prof. Johnson gives the results of analyses of eight samples of Sombrero guano, which he has recently performed. Four of these were taken from the large pieces as imported, and contained phosphoric acid equal to the following proportions of phosphate of lime, viz: 81.75 per cent., 79.88, 76.98, and 75.36 per cent., an average of 78.5 per cent. The remaining had been ground, and were on sale in Hartford and Norwich, Connecticut, and contained, respectively, 78.50, 73.21, 68.59, and 68.20 per cent. of phosphate of lime, the average being 70.9 per cent. The difference, therefore, between the lumps and the ground article is 8.4 per cent., which is attributed principally to the moisture absorbed by the ground article.

Among many chemists in Great Britain, who have paid much attention to Guano, as well as to its adulterations, I may mention Prof. Nesbit, of London, Doctor Cameron, of Dublin, and Prof. Anderson, of Glasgow. It does not appear necessary, however, to quote the results of any of their numerous analyses, as a sufficient number have been stated to shew the composition of the unadulterated Guanoes accessible to the farmers of Maryland.

It appears that the adulteration of Guanoes, especially the Peruvian, is very extensively practiced in Great Britain, and I regret to be obliged to believe that frauds of this kind are also perpetrated in our own country.

In order to protect our farmers against such impositions, the system of inspection of Guano was instituted in our State, and it has doubtless been a means of protection to a considerable extent. But yet it appears from the testimony of many farmers, that they have palmed upon them sometimes inferior or adulterated Guano, with the Inspector's mark upon the bags. Gentlemen have informed me that boatmen who have brought them Peruvian Guano, have offered to furnish them with good new bags, for the Guano bags containing the Inspector's mark! Suspecting, however, that they were wanted for dishonest uses, they refused to part with them.

There is a peculiar earth on the southern slope of Hampstead Hill, near the eastern limits of Baltimore, of which I have been informed large quantities have been, and may still continue to be, secretly carted into the city. There being no conceivable honest use for which this material can be brought into the city, and it being very similar in color to Peruvian Guano, it was reported to be used to adulterate that article, the mixture being put up and sold in old Guano bags, containing the Inspector's mark!—Some months since, the Inspector called the attention of the police to the affair, who arrested parties carting away Guano bags during the night.

The arrest was evidently made at an injudicious time, because, upon examination, the bags were found to contain only the earth. If, however, the parties had been watched until they had taken it to their mixing depot, and completed the crime, they might possibly have been properly punished.

During the late season of active field work, I endeavored to collect for examination, samples of Guano, ground bones, artificial fertilizers, which had been purchased and received by my farming friends. Finding but few kinds in their possession, I requested that samples might be forwarded me whenever they shall again purchase.

Among others, I got in person a sample of Guano, from Col. Jno. S. Sellman, of Anne Arundel county, which, being sold for Mexican AA, should have contained phosphoric acid equal to 55 per cent. or more of phosphate of lime, and yet the analysis showed but 36 per cent. In this case the Colonel paid for 50 per cent. more phosphate of lime than was implied in the purchase, and if the deficiency had not been discovered, he would have suffered a still greater loss by not applying a proper dose of the phosphate to his soil. How much of this Guano was sold and used by farmers, I have no means of knowing.

Samples of other Guanoes and fertilizers, have recently been received, and are under examination.

In using an ammoniated Guano, we should always mix with it a portion of ground plaster in order to prevent the escape of the ammonia or its carbonate. I may add also, that the experience of those who have several times applied Peruvian Guano to the same field, has generally shown that, after the second or third application, it produces little or no good result, unless other manures are also applied. In England also, the same effects have been observed.

This has been attributed to the large proportion of ready-made ammonia, which tends to promote a vigorous growth of crop, and thus rapidly abstract the essential constituents of the soil, including its phosphoric acid. It is for this reason that a better permanent effect results from mixtures of Peruvian and Phosphatic Guanoes, than from the former, when applied alone.

"Never let your tools and implements be exposed to the decaying influences of the sun, rain and frost, except when in use." "A place for everything, and everything in its place," will pay at least twenty-five per cent. per annum, in this respect.

For the Farmer and Planter.

A CHEAP ROCK FENCE.

Mr. Editor :—I have a great aversion to writing—sitting to write a letter or note worries me. I have seen your appeal to the planters and farmers of the up-country, to send you their agricultural experience, their improvements and success in planting, &c., to which few have responded, which I hate worse than writing myself. I have, therefore, concluded to begin, on my part, and hope others will follow my example, in making also a beginning. What intense interest do we feel in our old and useful occupation of planting! How glad we are to make advances in agricultural skill! to get new and more effieient agricultural implements! how to produce more corn, cotton, &c., on less land and with less labor! Have our planters no knowledge? Have they made no progress in agriculture for the last forty years? We once made cotton by tracing each side of the bed with the hoe (shaving down) and thinning with the hand, but now we side with the plow and thin with the hoe, by which we ean cultivate more than double to the hand. How did we once work corn? We planted in checks, plowed twice each way, from three to four full plowings; now we plant in drills, and succeed well, with only one plowing and two furrows round when the eorn is small. Now did these improvements grow up out of the ground spontaneously? No, indeed!—For the eorn culture we are indebted to no less a personage than Mr. Jefferson, and for our present very expeditious mode of working cotton to ——— for the plan of siding, and to ——— for the plan of chopping out. Now, have other improvements been made? If so, let us have them. Is a man useful to his fellows, who has experience and skill, and, consequently, success in planting, unless he publishes what he knows, for the benefit of others. As for the good he does the planters he might as well not have them. On the contrary, let him write down and publish through the *Farmer and Planter* what he knows, for the good of his brother agriculturists. How soon the light of his experience would shine in dark places. Who invented the side plow, the most useful of all plows? As it came into Fairfield from the Waxaws, I presume it must be a descendant of the old gentleman who found out, by close inspection, that all the horses in the Waxaws could not move the State House from Charleston to Columbia. Let us have the views of agrieultural gentlemen on the comparative value of plows. If there be any better than the side plow let us know it—I mean for eommon and general use. Let it not be said, sir, that I have made a great flourish of trumpets about nothing—that the mountains have brought forth a mouse. How much interest would such discussions excite? What would it add to your already very interesting periodical? The eultivation of the earth is the first and greatest business of man. We want light, experience, improved implements, successful modes of culture, comparisons, views and discussions upon all these matters.

I now proceed to describe a very useful method of disposing of rock and stone, which abound on many plantations to the extent (in some places) of a field nuisance. I had some ditching and walling done round an old vineyard some twenty-five or thirty years ago, by an Irishman. He faced the bank thrown up from the diteh with rock, which I found likely to be a permanent wall, by the adhesion of the stone to the dirt thrown up. It had, however, this deficiency: the bank or margin of the ditch would fall in, from excessive wetting or hard pressing, and to that extent this mode of walling with rock proved a failure. The parts not destroyed in this way are still sound and solid. Now, if I have invented a new and improved method of building stone walls or fenees, and am to receive credit for the same, it is only to this extent—that I eoncluded, that if one side of a bank of dirt could be faced with stone, and made durable, that a bank with two sides might be faced, and make a durable and permanent fence; so that a bank of dirt thrown up and faced with stone on each side, is the "stone wall" to whieh I wish to draw attention. This wall has this advantage: that the bulk of the wall (all the inside) is of dirt, while the two faces only are lined with rock. I made a fenec of this sort, some fifteen years ago, round part of my vineyard, and it is there to-day so firm and compact, that the stone can hardly be removed. My friends who examined the work, supposed the stone would fall out, and leave the wall of dirt to be washed down by rains—or, at any rate, heavy rains would demolish the wall. Time and experience have proven to the contrary—the stone adheres to the sides of the dirt with great power. The longer it stands and the more rain falls upon it, the firmer and morc compact it beeomes. So now it has been demonstrated that a stone fenee can be builded with comparatively few rocks, and be as durable and solid as a wall made entirely of rock.

Mode of Building Rock Fence.—The base must be as wide as the wall is to be high. The base lines may be run by the plow, or by stretching ropes:

Use the largest rocks for the bottom; first lay

down your two base lines, then fill with dirt from the sides, so as to pile it up over the tops of these bottom rocks, and then put your next course of rock against this bank or wall of dirt, sloping up, so as to make a four foot base terminate two feet wide at top. If the ground is sloping from the wall on one side in carrying it up, slope that side the most—the front on the upper slope may be almost perpendicular. In running a stone fence of this description on a level, each side must have the same slope. I will now continue the mode of construction. After you place the second course or line of rocks against the dirt, fill in more dirt or clay, heaped up so as to make a butment for the third line of rock. Each line of stone must draw in, as you progress, in proportion to the slope you give the wall. In building a fence of this sort, it will take two hands to lift dirt for each one laying the rock. I do not know how much three hands would build in a day, but they would make considerable progress. With the rock laid out on each side of the line for the fence, I should say from fifty to one hundred yards might be completed. Now, have I made myself understood? I fear not. Is it a new mode of constructing fences of stone? Solomon said, there is nothing new under the sun, and, for ought I know, he might have had fences around his old vineyards, made in the same way.

This fence, when constructed on the above plan, will have all possible advantages to recommend it. Constructed with few rocks, permanent, it may be made ornamental by planting a hedge on the summit of the Cherokee Rose, Osage Orange, Cedar, Arbor Vitæ, or any other tree or shrub, suitable for the purpose. For a fence 3 or 4 feet high, nothing would be much more durable, and certainly not more useful, than the fig. It is not only a fence, but a wall, to stop all the straggling soil, washed in that direction by heavy rains; it is close and tight, to the exclusion of pigs and rabbits; the most enterprising cow could not push it down—the worst mules could not throw off the top and jump over.—Its construction would remove the surface rock from our lands, thus abating a great annoyance to our plows and hoes.

Now, sir, if this be a new invention, I am so well satisfied of its durability and usefulness, cheapness and facility of construction, I that think the inventor ought to claim, of his countrymen, a rough stone monument, constructed after the same fashion.—Anxious for the success of the *Farmer and Planter*, I contribute this rough paper for your consideration.

BROAD RIVER.

From the N. Y. Spirit of the Times.

CHEMISTRY IN ITS APPLICATION TO AGRICULTURE AND PHYSIOLOGY.

BY A. S. COPEMAN, V. S., UTICA, N. Y.

"The truly vital operations of the animal as well as the vegetable organism, are performed by the agency of untransformed cells."—*Carpenter.*

Life pre-supposes the constant correlation of two indispensable elements, an *organism* and a medium, understanding by *medium* the whole of the surrounding circumstances necessary to the existence of the organism. From the reciprocal action of these two elements result all the phenomena of life.

Seeing that the first transformation of inorganic into organic substances takes place in vegetable assimilation, and that all subsequent transformations into higher tissues are but modifications of that one process, it is clear that the elementary laws of assimilation may more easily be detected in the vegetable than in the animal world.

Confining ourselves, as we have done hitherto, to the teachings of observations and induction, we have to ask this question: What is the form which, being universal, may be supposed indispensable to organic life? Half the prosperity of philosophy lies in being able to put a definite question. Interrogate nature and she will answer. She answers in this case emphatically, a *cell*. The cell or sphere is not only the typical form of an organic being, that with which every organic being from the lowest to the highest commences, it is the indispensable condition of the being's existence. A cell is the whole of one of the simplest plants, such as the *Proto cocus*, and then there are large plants which are nothing more than the association of myriads of such cells. The lowest type is thus a cell; the second stage in advance is an association of cells; the third, a transformation of these cells into a tissue, but in one and every case the starting point of organic life is the assumption of cellular or *spherical form*, and in consequence of these forms, peculiar properties manifest themselves.

The novelty of this statement may startle, but what is it more than the mineralogist's explanation of crystalization? Just as the solution of a salt becomes crystal *only* when its molucules arrange themselves into a determinate form, so does the blastema become vital *only* when its molucules arrange themselves in a determinate form. Not only is this assumption of a *spherical form* the last step in the process. but by the loss of that form the cell loses its peculiar vital characteristic reproductive powers.

The basis of the substance of all vegetables, when examined by the microscope, are found to consist of cells; even in the most highly developed plants all the organs are in the youngest condition composed of cells alone, and the vessels only appear during the subsequent development. If a row of cells arranged in a line become combined during the course of their development into a tube with an uninterrupted cavity, through the absorption of

their cross walks, a compound elementary organ is produced, *the vessel.* The basis of the membrane of vegetable cells consist of cellulose, a colorless substance, which is insoluble in cold and boiling water, alcohol, ether, and dilute acids. It is converted into dextrin by dilute sulphuric acid at a boiling heat. When imbued with iodine it becomes colored indigo blue. The credit is due to Payen of having demonstrated that the substance of all cells, from the highest plants down to the fungi, when purified from foreign deposites, exhibit the same composition, and assumes the blue colors of cellulose on treatment with iodine and sulphuric acid.

Cellulose probably does not occur in a pure condition in any cell's membrane, since a series of both organic and inorganic compounds are deposited within it; in which fact is to be sought the explanation of the manifold physical and chemical differences which are exhibited by the membranes of the same cell at different periods of their age, as well as by the cells of different plants.

In all plants a skeleton (the ash), corresponding to the form of the membrane, and composed of the alkalies, earths, and metallic oxides which had been deposited in it, remains behind after the cells have been burnt.

Since the corners and edges of cells are rounded off so that their flat faces meet at sharp angles in comparatively few cases, it follows necessarily from this condition that the cells are not coherent together, by their whole surfaces, but leave empty spaces between them, which run along the edge of the cells in the form of triangular canals, opening into each other at the corners of the cells, and forming a network of tubes branching throughout the whole plant, to which the name of *intercellular passages* has been applied. In living plants they are, with few exceptions, filled with airs.

If a tissue composed of young cells be left sometime in alcohol, a very thin membrane becomes detached from the inside walls of the cells in the form of a closed vesicle, which becomes more or less contracted, and consequently removes all the contents of the cell which is enclosed in this vesicle from the walls of the cells. This inner wall is called the *primodial retriele;* according to Mulder, *proteine* may be always detected in it, but no cellulose. In the centre of the young cell, with rare exceptions, lies the so-called *nucleus.* The remainder of the cell is filled with a viscid fluid containing an abundance of *albumen.*

No plants except the Fungi are without *Starch.* Whether or not starch occurs in an amorphous condition is still doubtful. It is likewise doubtful if it occurs in a state of solution. The form in which starch occurs universally is that of small colorless transparent granules, which are accumulated in the cells without definite arrangement and invariable numbers, sometimes swimming freely in the sap, sometimes slightly adherent to the walls. Their size varies from an immeasurably small diameter to a magnitude visible even to the naked eye, but the maximum size of the granules of each plant is tolerably definite. Like the size, the form of the granules varies extremely in different plants, and is sometimes so characteristic that, in many instances, we can determine by the microscope the source where a starch has been obtained. In all vegetable cells starch is a transitory product, and applied to various purposes of nutrition. Thus the starch disappears from the albumen of the seeds of Palms about the period of maturation, and in its place appears a fixed oil, for which it undoubtedly furnishes the materials; thus it disappears during the germination of seeds and bulbs, serving for the nutriment of the young plant, &c.

Certain compounds, most closely allied to starch, escape from microscopic observation, because they are dissolved in the cell sap; these are gum and sugar.

Sugar is very widely distributed, since it not only replaces starch, as in the sugar-cane, the beet, etc., but still more frequently precedes the deposition of starch in an organ, and is also formed at the solution of starch, as in trees, in the spring, in the generating seeds, etc.

The *essential oils*, when produced in large quantity, usually completely fill isolated cells, and cavities which lie between cells.

All plants prepare a more or less abundant quantity of organic acids, oxalic, malic, citric, tartaric, etc.

In plants the fluid nutriment is taken up by absorption through cells. As the cell's membrane has no orifice, only such matters as are actually dissolved can be absorbed into the cells, with the water which penetrates the cell's membrane. It has long been decided that solid substances, insoluble in water, cannot pass into plants, but this may be doubtful of the coloring matter of phytolacca, of decoction of logwood, of infusion of saffron, etc., since many observers *e. g.* De Candolle, have seen such coloring matters pass into living plants. But all accurate observations indicate that this does not happen in uninjured roots, but only occurs when the colored fluid comes in contact with the wounds of the plants.

Since the discovery of *endosmose* most vegetable physiologists have assumed it as an axiom that the absorption of cells depends wholly and solely upon the laws of *endosmose*, none of the peculiar forces of the living cell co-operating. All the conditions to bring about good strong endosmose do really exist in the living vegetable cells, namely, a membrane freely penetrable by watery fluids; on the one side of this the cell-sap, which contains proteine substances, dextrine sugar, etc., in solution; on the other side the water occurring in nature, in the state of an extremely diluted saline solution.

Since the leaves have a large surface with a comparatively small mass, they are fitted to evaporate a great quantity of water; thus, for example, in Hales' experiment, a sun-flower, three-and-a-half feet high, lost on an average a pound and fourteen ounces of water daily on warm and dry days. So considerable a loss of water cannot remain without reaction upon the absorption of the root cell. For since the sap in the cells of the leaves becomes so much more concentrated, through the loss of water, their power of inducing endosmose will increase in proportion; they replace the water taken from them from the cells of the stem, and so this action is continued through the whole tissues of the plant, down

to the roots, which strive to absorb water from without in the same proportion as it is evaporated from the leaves. A proof that the evaporation of the leaf actually increases the absorption, is again furnished by the experiments of Hales, according to which the quantity of water that a shoot absorbs is in direct proportion to the number of its leaves; and the quantity of water absorbed sinks to one-half, when half the leaves are cut off the shoot.

The question, what nutriment matters serve for the food of the plants, includes a two-fold one.—First, what elementary materials are made use of by the plant, in the formation of its substances? and, second, what are the combinations in which these elementary materials are taken up by plants?

The number of elementary substances which occur in plants constantly, and therefore must be looked upon as natural constituents, is very inconsiderable, viz.: 1 oxygen, 2 carbon, 3 dydrogen, 4 nitrogen, 5 sulphur, 6 phosphorous, 8 potassium, 9 sedium, 10 magnesia, 11 sillium, 12 iron.

Eight of these elementary substances must be present *in the soil*, if plants are to flourish luxuriantly; these eight substances are like eight links of a chain round a wheel. If one is weak the chain is soon broken, and the missing link is always the most important, without which the machine cannot be put in motion by the wheels—the strength of the chain depends upon the weakest of the links.

The principal mass of all vegetable substances is composed of oxygen, carbon, and hydrogen; these furnish the materials for the formation of the cell membrane, and nitrogen is an essential constituent of the *proteine* substances. Sulphur and phosphorous, although contained in inconsiderable quantity in plants, play a most important part, being necessary constituents for the formation of the proteine compound. And here it may be well to state more fully the important fact, that plants are formed from these materials, only when the *atmosphere and soil* supply them at the same time in suitable quantity, and in proportions; the four "atmospheric elements," oxygen, carbon, hydrogen and nitrogen, do not nourish without the simultaneous action of the elements of the soil, and the latter are equally valueless without the former. It hence follows, as a matter of course, that no single element of plants named above, possesses superiority over another.

Of all the elementary substances which enter into plants, oxygen is the only one that is taken up in a pure condition; plants can only appropriate the others out of chemical compounds, which for the most part they decompose. Here at once arises the question, whether the elementary substances, when they are to serve as food for plants, must be already combined with organic compounds, or whether plants possess the power of feeding upon inorganic compouds? In no question of vegetable physiology, has so active a strife existed as on this, espeeially since Liebig sppeared as a defender of one of the extreme answers to it.

Although no universally valid answer can be given to this question, it is beyond any doubt that plants, if not as a whole, yet in an overwhelming majority, possess the power of forming organic out of inorganie substances, and that inorganie substances mostly play the principal part in nutrition. This is evident both from observation made on a large scale in free nature, and in small artificial experiments.

The bowels of the earth rumble and heave; Vesuvius opens her fiery mouth, and vomits forth a sea of vapors and molten lava; the fumes of her sulphurous breath slowly descends like a mist, which is absorbed by the sand and ashes around her cooling feet. Time rolls on, the lava is bleached and becomes porous fissile, and honey-combed, till at length it crumbles into powder, the type of fertile soil.

This soil being derived from the disintegration of lava, eannot possibly, owing to its origin, contain the smallest trace of *vegetable matter;* yet every one knows that when lava or volcanic ashes have been exposed for a time to the influence of air and moisture, all kinds of plants grow on them with the utmost luxuriance.

It is perfectly universal experience, that when the vegetation is left to itself upon a particular soil, and its products are not removed from the ground, organic substances are formed, in consequence of the death of plants accumulating from year to year, which can, of course, only be the case through each generation of plants producing a greater quantity of organic substances than it consumes. It is not requisite to demonstrate more minutely how these circumstances show the *total error* of the view, supported, indeed, less by vegetable physiologists than by "popular" writers on agricultural chemistry, that plants subsist solely on the mouldering remains of former plants or animals.

The inorganic compounds which are taken up by plants as food, and which furnish them with the four principal elementary bodies which they require for their formation, are water, carbonic acid, and ammonia. As the absorption of watery fluids has already been discussed, we now turn to the consideration of carbonic acid. This, it is well known, exists universally diffused in atmospheric air and in water; experiments prove that plants do not absorb the carbonic acid dissolved in water with the latter by means of its roots, but that their leaves possess, in a high degree, the faculty of absorbing carbonie acid, and of liberating oxygen.

We owe the more accurate knowledge of this process to the admirable experiments of Saussure, Grischow, and Boussingault. When a leaf shoot, with its lower end dipping in water containing carbonic acid, is enclosed in a glass globe, its leaves exhale more oxygen than when its lower end is dipped in common water. A leafy shoot still connected with the tree, enclosed in a glass globe, increases the oxygen in the globe. Pieces of torn leaves possess this function, as well as the entire leaves.

The phenomena may, in fact, be summed up in the following statements. When plants are exposed to the influence of *sunlight* in atmospheric air, they remove the carbonic acid and exhale oxygen in its place.

We know scarcely anything of the chemical processes in the interior of plants, on which depends the assimilation of the nutriment matter taken up, and the gradual conversion of this into the various compounds which the plant contains.

One of the most general phenomena, since it occurs in all green-colored plants, is, as we have seen, the absorption of carbonic acid, and the exhalation of oxygen gas. The experiments of Saussure demonstrate that this process stands in most intimate connection with the function of organic substances; nothing seemed easier than to explain this process. The neutral compounds of the plant dextrim, gum, sugar, and starch, are composed of carbon and the elements of water; it was only requisite to assume that the carbonic acid was decomposed in the leaves, its oxygen given out as gas, its carbon combined with water, which is never wanting in the plant, and the entire process was elucidated in the simplest way. This theory consequently met with universal acceptation. The compounds containing nitrogen stand in opposition to those devoid of it.—Though in quantity they may stand far behind the latter, their importance in the vital phenomena of plants is not less; nitrogenous (proteine) substances, as we have seen, line the cells, as the *premordial retrille*, and, consequently, the contents of the cells are ordered under their immediate influence; they originate the development of new cells, and set in action the decomposition of carbonic acid. It is now as good as certain that ammonia furnishes the nitrogen requisite for the formation of the proteine substances. Of the formation of the other nitrogenous compounds, such as the vegetable alkaloids, essential oils, etc., and of their import to the plant, we know little or nothing.

A portion of these substances, as the essential oils, the milky juices, the alkaloids, are in the highest degree poisonous, both to the plants which prepare them, and to others when they are caused to absorb them. These secretions are commonly separated from the other matters within the plant, being either enclosed in special cells, or contained in canals which run between the cells; this is universally the case with the milky juices.

Having thus considered the vegetable cells with reference to its mysterious *form* and wonderful *properties*, let us pause to reflect for a moment on the *minuteness* of their organs, by which the smallest fern and the largest tree in the forest is fed and sustained. Microscopic mouths in the leaf, suck in gaseous food from the air; the extremities of microscopic *hairs* suck a liquid food from the soil.

We are accustomed to admire, with natural and just astonishment, how huge rocky reefs, hundreds of miles in length, can be built up by the conjoined labors of myriads of minute insects, laboring together on the surface of a coral rock; but it is not less wonderful that, by the ceaseless working of similar microscopic agencies in leaf and root, the substance of vast forests should be built up and made to grow before our eyes. It is more wonderful, in fact; for, where in one case "dead matter" extracted from the sea is transformed only into dead rock, in the other the lifeless matter of the earth and air is converted by these minute "plant-builders" into living forms, lifting their heads aloft to the sky, waving with every wind that blows, and beautifying whole continents with the varying verdure of ever-changing leaves.

Boys reach manhood in a *roundabout* way.

TOO MUCH LAND.

We find much said in our exchanges on the comparative advantages of large farms and small farms. A writer in the *Homestead*, published in Connecticut, where farms are already small, compared with our Southern farms and plantations, says: "I believe in a little farm well tilled; too much territory is the greatest evil farmers have to cope with.—This truth is seen every day; let us mend the matter." We suppose it will hardly be gainsaid that the desire of spreading out over more territory than they can properly occupy, is a national weakness of the American people. The wish to own *some* land is scarcely more universal than the desire to have more. While the Western pioneer is not willing to have a neighbor so near that he can hear his dog bark, the largest proprietor in the old States can see or imagine a reason to extend his borders on one side or the other. That this disposition has exerted an evil influence on our agriculture, there can be no doubt. Men will exhaust in the purchase of land, means, a portion of which could be much more profitably expended in the cultivation of a less number of acres. They wear out their energies and their lives in the heart-breaking business of working unimproved lands, with inadequate labor, insufficient team, unsuitable implements, and no manure, and give the caviller additional arguments against agriculture, as a pursuit not fit to be followed.—Every right thinking man will, therefore, set his face firmly against the temptation to work more land than he has the means to work well. He will by all the means in his power, so order his affairs, that the valuable capital in land shall not be comparatively idle for want of active capital to make it productive. As well may he expend all his means in the purchase of mines, rich in gold, and leave them year after year unworked.

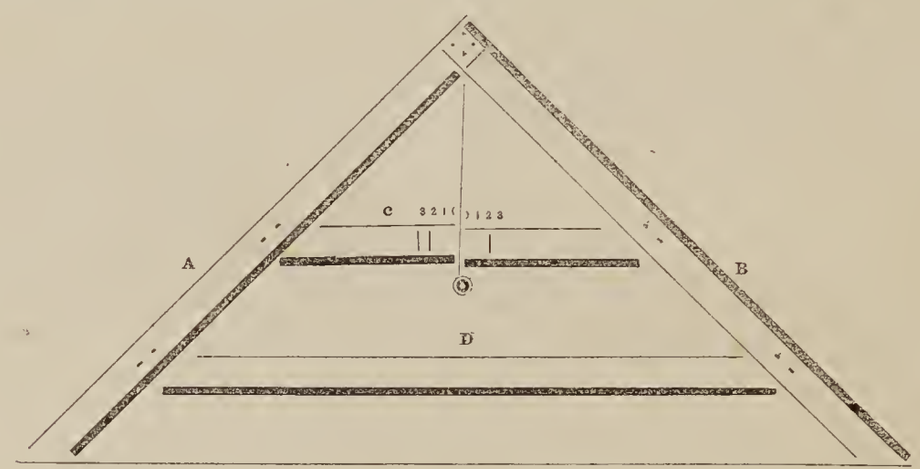
It is a prevalent error, however, that it is necessarily wiser and better economy to cultivate a small than a large farm—that twenty acres can be worked to more advantage than a hundred, and a hundred than five hundred. It may be true, though we do not know that it is so, that small farms are more generally profitable than large ones. There are many men who are capable of managing a small business, who would fail with a large one—and many more who can command the necessary means to work a small than a large farm. But there is no reason that we are aware of, why a man, who has the capacity to manage a farm of five hundred acres, should be confined to one hundred, except the want of means to work profitably the larger number. On the other hand, there are economical considerations on which he may extend his operations. There is, for instance, a certain amount of building required, implements, tools, horses, cattle, for almost any number of acres, however small, and the necessary expenditure for such purposes will be much less comparatively for a farm of two hundred, than for one of a hundred acres, while the skill and management of a good farmer will be very little more taxed. It is not to be questioned, however, that the almost universal disposition to attempt to cultivate more than we are able to cultivate well, is a grievous evil, and one which every owner of land should set himself diligently to abate.—*Amer. Far.*

From the Cotton Planter and Soil.

HORIZONTAL CULTURE.

Dr. Cloud—*Dear Sir:*—There are many things to be taken into consideration, theoretically and practically applied to lands that are wavering, or, in other words, that are hilly, and need bringing to a level, in order to retain the soil.

The first thing to be done is branch-ditches, conductors, to be cut as straight as possible with the spade, and large enough to hold all the water that the hill-side ditches may empty into them. This done, the next thing is the hill-side ditches. These will require some skill, patience and knowledge; but before you can commence, you must have some kind of an instrument to measure the grade for the ditch, for this I have found nothing to surpass the rafter-level. The first thing, then, is the construction and description of an instrument absolutely necessary to lay off the work correctly—the opinion of many that they can lay off as good a ditch or run as level a row by the eye, to the contrary, notwithstanding.—Take two strips of plank 1 inch thick, 3 inches wide, and 8 feet long, put them together at one end, by letting them into each other at such angle as that the other ends will be just 12 feet apart from outside to outside, and take two other strips of the same width and thickness and of sufficient length, and let the end of one into the piece, one-third from the top, or crown, and the other end one-third from the foot of the opposite or other side piece. The other piece must be let in the same way from the opposite side piece, which will cause them to cross each other, where they must be let into each other, the whole put together, with inch screws, firmly. Then draw a line from the outer corner of one foot to the outer corner of the other, mark and saw off, this will make the instrument flat on its feet, when raised upon them. It should have two good coats of paint to protect the wood from the influence of the weather. You can either attach a spirit-level to it, or you may use plumb and line; (I use the plumb,) fasten the line at the crown of the instrument, and on a strip attached to the undersipe of the two braces straight



across from one to the other, get your level marked by placing the instrument on some level surface; to get the grade marks, place a block one inch thick under one of the feet, then mark the inch under your plumb line, and so on, until you get as many inches either way as you desire. Now the instrument is ready for operating with.

The next thing is to lay off the hill-side ditches. Examine the hill or slope that you wish to operate on, consider where the ditch ought to commence, where it should run, and where it should empty, so as to have the ditch where it ought to be; but at no time give your ditch less or more fall in order to get it to empty at a certain place. Always commence the ditch some distance above all the washes in the land, so as to stop all the water that collects and carries off the soil. But if there are any gullies in the field you wish to hill-side ditch, first fill them up so as you can more readily cross them with your ditch.

You can commence your ditch either at the emptying place or at the top or upper end of the ditch.—With new beginners, they had better begin at the top and carry the grade down. First select your place to begin, all ready on the spot, a good plowman, with a good, strong mule and good turnplow. Now commence laying off your ditch, and let the plow follow after you. The first three strides of your level give 3 inches fall to a stride, (without there should be a large quantity of water caught at the start,) then give one and a half inches every stride for the first 200 yards; if your ditch is longer, (though it should not be if it possibly could be avoided,) the first 100 yards give one inch, and the next 100 yards half an inch; if your land should be very sandy, give less fall, and make the ditch wide with a high bank. Now your ditch is laid off; it has but one furrow; have another good plowman with a good and large turnplow and strong mule; have this plow, or as many more as are necessary, plowing out the ditch. Run three furrows close and deep as a mule can well pull the plow, above the first furrow or the furrow that the ditch was laid off with, which will make four furrows, and in the 4th furrow run another furrow, in order to get the ditch the deepest on the upper side. Always in plowing out the ditch, throw the dirt to the lower side; to do this you will always have to drag back the plow, without you should be fortunate enough to be supplied with hill-side plows.

For every hundred yards, after the first hundred, increase your ditch in size one furrow in the width for the bottom. Say for the first hundred yards four furrows, for the second hundred yards five furrows, and so on. The great fault of many in making hill-side ditches, they make them too small—they soon become filled up, break, and do much harm to the land, in the way of making gullies, carrying off the virgin soil, &c.

In laying off hill-side ditches there are many things to be kept in consideration, the quantity and force of the water that will fall into the ditch you are about making; you will have land that has but little descent; then in a few strides it will be steep and full of gullies that you have previously filled up, here give your ditch more fall, especially when you cross the old gulley, in order to cause the water to run off more readily, for at all such places the water comes quicker and with more force into the ditch. Consider the quantity of water that will flow into your ditch at the heaviest rains that may fall on your fields, and make your ditches accordingly. Now your ditch is laid off and plowed out the first time, and the hoes should follow and drag the plowed up dirt out of the ditch, bringing it all to the lower side of the ditch; this done cause the plows to follow after the hoes and plow out the ditch again close and deep with one furrow less; but be certain to run the extra furrow in the last furrow on the upper side in the bottom of the ditch—this will cause the ditch to be deeper at the upper side than the lower side, which is a very necessary thing, so as to cause the water not to bear too heavily on the fresh bank below. Now cause the hoes to draw the dirt out of the ditch the second time. At this time you may, and generally can, complete the ditch; have the loose dirt, and all bumps that may be in the bottom of the ditch dragged out clean, roots and grubs cut out smooth—large stumps and trees you can shun by observing them in time, and grade and make the ditch so as not to wash or break over at them, or by the alteration that you will have to make. Leave nothing close about the ditch that may fall into it, such as brush, old grass, and weeds. Be certain to make your ditch large enough to carry off all the water that may fall into it, Make it wider, and with a stronger bank at all the gullied places, for at these places the water will always come with some force, and here the ditch is more apt to break, and, when broken, it becomes very troublesome, for it washes out the old gulley that you have labored hard to fill up; then your work in this line is all to do over, and you have less dirt to do it with; also, your ditch bank at this place is to make up again. Always recollect hill-side ditching is worth doing, and "what is worth doing, is worth doing well."

Your ditch is now completed. Now you must consider where the next ditch will be necessary. Here you must exercise some judgment—first consider the quantity of water that falls at the heaviest rains, and the distance below the ditch that you first laid off that the water will commence carrying off the soil, (*i. e.*, the surplus water that your runs will not retain,) here as near as possible make your next ditch, and so on until you make all the ditches necessary on this slope or hill-side, and also wherever a ditch is needed in the field, or in any field that you have, until you have every spot of ground in your plantation, that washes the least, or is likely to wash, protected by a hill-side ditch. Here I would remark, the proper time to hill-side ditch your land is when it is just cleared; whenever you have your new ground ready for the plow you should first lay off and make all the hill-side ditches that shall ever be needed—this done, the next thing is to run off your land in rows to a perfect level, and ever afterwards keep them so.

Having your field or fields hill-side ditched, the next thing in consideration is the level or horizontal culture, or the means by which to arrive at it. Take your instrument where you wish to commence laying off your rows—have a bull-tongue plow this time to run off with. It is best to commence near the top of the hill; be certain to commence so as to catch all the rolling water. Start with your level, carry it to a perfect level, cause the bull-tongue plow to follow after you, run on until you come to a ditch, do not cross it with your plows, for if you do the rows will soon fill it up; but when you get to the ditch your first guide row is done, then go 20, 30 or 40 yards, according to the slope—the steeper the closer the guide rows must be. So at the proper distance commence your second guide row, run as the first, and so on until the field or the whole of your plantation is leveled. You may start plows to laying off as soon as you get two guide rows run, but it is best to run all your guide rows first, so that when you commence laying off you can be with your plows to detect any errors, and be ready to run in new guide rows that may be needed in filling up between the first ones.

In laying off the rows, give each hand (plowman) a rod just as long as you wish the width of your rows, so they may have a guide; they will soon learn the proper width by the eye. Cause one plowman to commence laying off rows on the lower side of the guide row, and one on the upper side of the guide row next below, so as between every two guide rows the laying off will meet in the middle. This they will do first at places where there is more slope in the land, and at more level places there will be corners that must be run off; these will be mostly short rows. If by this time the level is lost, you must run in more level or guide rows, and lay off from them so as to have all your rows from one end to the other on a perfect level; and in this way continue taking up the guide rows until your field is completed, or the whole of your plantation is put in rows to a perfect level. There is an opinion among many that this cannot be done—impossible, they think, to get every row from one end to the other to a perfect level. It can be done, and should be done by every farmer that cultivates hilly land; but to do it requires a great deal of patience, and a strong determination that there shall not be the least wash in his plantation. Keep land, in this portion of the country, from washing, and it increases in the ingredients that give food to plants, for the soil has a self-sustaining principle, and cannot be *worn-out*, if well hill-side ditched and cultivated on a level, with a proper rotation of crops, and those crops cultivated in accordance to the laws naturally that govern each and every plant that we cultivate. For an example, take a poor hill-side that is almost murdered, ghost-like staring you in the face, put it under a proper system of horizontal culture—when you plow, plow deep and on a level; how soon it is reclaimed! Nature will do her part, and soon, instead of a gullied and galled hill-side, you have one that will produce good crops. The great object in view is to retain the rain water where it falls out, so as to have food in store for the plants during drouth.

To keep your level or guide rows, in laying off the rows, the one next to the row that you run with the level make a little wider than the usual width of your rows, and when you sow the land in small grain, or break it up, lap two furrows on your guide row. This ridge will remain distinctly, so when you wish to run off the land in rows again, you will not

have to run off guide rows. Always plow to a level, and never plow across the hill-side ditches. Empty all your hill-side ditches into your conductors; never let them empty under the fence into the road.—This makes a hog-hole, and soon ruins the road.—If you should have a ditch running the same course of the other ditches that cannot reach the conductors, let it empty in a hill-side ditch that does empty in a conductor.

I have, in a hurried manner, written out the plan (by which I have been operating for the last seven or eight years, on the plantation where I have been doing business,) of Horizontal Culture. Land that I could not make produce but two to three hundred pounds of cotton per acre, now produces over one thousand pounds per acre without one speck of manure. DANIEL WOFFARD.

The foregoing excellent, because practical, article, though not written in that *belle lettre* style that may please the fancy of some readers, is eminently worthy of the study and adoption of every man in this country who cultivates but ten acres of land. Mr. Woffard understands the philosophy and true principle of properly placing land under the *level culture system*. Every position is distinctly taken and clearly described, so that no practical man need err in its application on the field. All of our old subscribers will distinctly trace through all this article the teachings of the *Cotton Planter*. Years ago (in 1844), when we put the level on our rows at LaPlace, but one writer, (Mr. Hardwick, of Georgia,) that we now recollect, stood firm with our position. Why did we take that (then extreme) position? The answer is found in this sentence from our correspondent, viz: "The great object in view is to retain the *rain water, where it falls out*, so as to have food in store for the plants during drouth." Mr. Woffard is a manager or overseer, and has, by this system, on the land of his employer, in the short space of seven or eight years, so improved it, that on land which produced but 300 pounds of seed cotton when he commenced operating on it, now produces, under this level culture system, *that retains rain water where it falls*, one thousand pounds of seed cotton. It is not surprising that such an overseer should have remained thus long in the management of the same plantation.—Every plantation in the cotton States can be treated in the same way and to the same advantage—the comparative level not less than the hilly. So level your culture and deepen your plowing, whether on level or hilly land, as to retain the rain water where it falls!—ED.

BREEDING AS AN ART.

The true value of pedigree in breeding has always been a vexed question among breeders. Men, careful, observing and skillful, have frequently come to very different conclusions on a question as interesting as it is important. Some affect to decry blood, as a slight thing, insisting that form, motion and just proportion, should be the principal considerations in our selections of breeding animals.

Others rely so much on blood, that they pay too little regard to form, movement and symmetry, and can see nothing wrong in pure blood—it *must* be good because it *should* be, from its noble ancestry.

To be at once a skillful and successful breeder, neither of these theories must be adopted. Experience clearly demonstrates that a race of animals which have been bred so long as to acquire a fixed type, have a wonderful power of communicating these peculiarities to their progeny. The same general form, the same color and the same expression of feature are transmitted with remarkable fidelity. When there is only a partial infusion of a particular strain of blood, it is often shown by appearing in some part of the cross, without any evidence of pure blood in any other part of the animal. Thus, a cross between the race horse and a horse having only a small portion of his blood, in the common mare, frequently shows the soft, silky coat of the race horse, with perhaps little else to show the cross. Cattle, far removed from the thoroughbred will often show all the peculiar *markings* of the race, while in almost all other respects they are entirely unlike them.

But on the same principle by which blood communicates its valuable qualities, it carries along with it its defects. Hence, before selecting an animal, however pure in blood, we must carefully examine its form and see if it has all the requirements of its race in a high degree; and we must at the same time consider whether it is free in whole or in part, from the defects of its family. If this be so, then we must see whether its qualities are superior or fully equal to the best of the race.

If we find an animal with the best pedigree deficient in form or movement, or valuable qualities, it must be rejected at once. For to attain the best results we must breed from the best blood, and from the product we must again select with the most consummate art those for the improvement of the stock which have the most valuable qualities and the fewest defects.

In breeding the horse, power and endurance are the leading considerations. But, then, symmetry and grace are elements of so much value to the eye of an amateur, that a powerful animal, rough and uncouth in form, and destitute of grace in his movements, will not usually meet with a ready sale or bring a very high price. The breeder's constant aim in breeding these animals must be to combine powerful action with symmetry, grace and beauty.

The farmer who breeds cattle must or should have a definite object in his mind. If his farm is rough, with short feed, the Durham or Hereford will not be likely to thrive so well as some of our native varieties, or the hardy and beautiful Devon.

Have we not as good, nay *better* milkers than any we can import? Very little attention has been paid to the improving our native breeds of cattle for this purpose.

The question of the true value of pedigree is embarrassed with another of equal difficulty. In following pedigree the breeder finds it convenient to breed in-and-in, or in other words, to breed together two animals nearly related; and the question is, how far experience warrants this in breeding? It seems to be everywhere conceded that man must not connect with near relations. This is considered to be fully settled by experience, and the instincts of our nature seem to admonish us of this great law. But because this is a law of man's nature it by no means follows that it is a law of animal life, as some have rashly concluded. With regard to most ani-

mals we find no instinct forbidding the intercourse of near relatives, and to a considerable extent it seems a matter of chance. In the case of many insects, breeding in-and-in is the law of their existence. The female honey-bee has no connection with the males of strange swarms, but her intercourse is with the males of her own hive. Many insects fertilize themselves.

Some experienced breeders of cattle and horses think that breeding "in" and then "out" is meant breeding an animal into the same family from which it sprung, and then into a family of the same breed several degrees of relationship removed from it.—The English race-horse you may breed to pure blood, and yet the two animals may be only very distant relations. But if you are desirous of establishing a new breed or variety you must to some extent breed "in-and-in," in order to perpetuate the qualities prized in the original, and to give to the stock bred that fixedness of type and uniformity which is of great importance. But this alone is not sufficient—care must be taken to select animals that bear the closest resemblance to the original, including form, size, color, movement, expression of countenance and temper.

There will be found to be a very great and striking difference in the power of animals of the same blood in transmitting to their offspring their own peculiarities. This power will exist in a much higher degree in the offspring strongly resembling the original than in those possessing less resemblance. But it must not be forgotten that it is impossible to determine with absolute certainty what the character of an offspring will be, simply by a careful consideration of its pedigree, or comparison of its form and temperament with the original type. Attention to these will enable the breeder to form an *opinion* of the character of the stock the animal will likely produce; and this opinion, if the result of a well-informed judgment, will prove, in many important respects, correct. Farther than this we cannot go. In selecting animals for breeding purposes, great care should be taken that we do not allow ourselves to be enticed into the choice of an inferior animal by a long and brilliant pedigree.—However important, and however much we may desire it, we should never allow purity of blood to blind us to defects in form or substance.—L., *in American Stock Journal.*

To Remedy Sows Eating their Pigs.—*Editors Wisconsin Farmer:*—Seeing an inquiry about a remedy to prevent sows eating their pigs, I would state that I have had several sows that would eat their pigs, if dropped when they could not get green feed, but never when they could. This eating of their pigs only in winter suggested a remedy which I tried and found successful. I had two sows drop their pigs in mid-winter—both of the cannibal family—about three weeks before their time. I commenced feeding on greasy slops from the kitchen, with some raw potatoes and fresh meat every day, until the pigs were six or seven weeks old, by which means I remedied the difficulty. To the above mentioned feed I added plenty of corn.

A Subscriber.

Eastman, Crawford Co., April, 1860.

BENEFITS OF SUMMER DROUTH.

Various portions of the country have suffered more or less for want of rain during the past summer. In some sections the corn and potatoes have been materially cut short from this cause; potatoes will make a scanty return, while corn will hardly exceed half a crop. But notwithstanding the immense excess of rain that had fallen throughout the country, during the last winter and spring, the drouth has not been so general as it was anticipated in the earlier part of the season, but favorable and timely showers have visited many portions of the country, and brought forward the summer and fall crops to a full average. The greatest deficiency of rain has been experienced in Ohio, Indiana and Kentucky, and portions of Illinois, and even over these States the degree of drouth has been quite variable. In seasons of extreme drouth, when the summer crops wither and die for the want of the "early and the latter rain," when the entire country seems parched and blighted, and threatening famine almost inevitable, we are apt to regard this withholding of a due proportion of refreshing rain as a kind of judgment sent upon us by an offended Providence—when, if we properly understood the operations of drouth, we should rather regard it as a blessing in disguise. The least observing among us may be able to call to mind the fact that crops the succeeding year after an excessive drouth, come forth with remarkable luxuriance and the harvest proves abundantly productive.

Observation and experience, confirmed by chemical research, have long since taught us that there is a limit to the supply of the inorganic or mineral constituents of even the most fertile soils within the reach of the roots of growing crops, and that the perfection of farming consists in that course of management that is best calculated to husband and increase these fertilizing ingredients. But where cultivation is continued for a series of years, without due regard to proper rotation of crops or of careful manuring, each crop, as it is removed from the soil, carries with it a portion of the elements of production; and this, together with what is carried off by washing rains, speedily impoverishes the land.—But nature, ever true to herself, is constantly laboring to supply these deficiencies. Besides the supply of mineral ingredients, derived from the slow disintegration of rocks by the action of the air and rains, a more abundant and immediate supply is brought up from the depths of the soil during these much dreaded seasons of drouth. The manner in which this beautiful provision of nature is carried out is an interesting and profitable subject for consideration. In seasons of excessive wet, or long continued rain, the water that falls upon the earth is carried from the surface in streams, evaporated in the air, or passes off through the soil down to the springs below. In heavy, clay and loamy soils, the waste of the fertilizing materials of crops by these processes is comparatively slow; but on loose sandy soils it is more speedy. It is this difference in the texture of soils that constitutes the chief difference in their degrees of fertility; while the tenacious loamy soil retains the mineral and organic ingredients of crops, the porous sandy soil parts readily with these by the washing and leaching of rains.

During the dry, hot weather of summer, an immense amount of moisture is carried from the soil by evaporation; and as the draft is made from the surface, the deficiency in some degree is made up from the depths of the soil below by the process of capillary attraction, just as water will rise from the lower point of a piece of moistened sponge, when held in contact with water—or by a more apt illustration, as a piece of sugar will drink up a body of water when placed in contact with it. This supply of the draft of moisture made from above is continued from the depths below, so long as the earth remains in the condition favorable to this upward circulation of the moisture that has been stored up from previous rains; and that will be so long as the drouth continues. With this continued rise of the moisture from below there is a corresponding proportion of the inorganic, or mineral constituents of plants, brought up in solution with it, and thus left within the reach of the roots of the present or future crops. The benefits of this kind of circulation are greatly increased in times of drouth by keeping the surface loose and mellow by repeated cultivation.—We have frequently urged this infallible remedy against the effects of drouth, and it would seem that no one who has ever fully tested the benefits derived from it in seasons of drouth, when using proper implements for cultivation, could hardly be prevented from employing such means, however pressing other labors might be upon the farm. By keeping the surface constantly mellow by repeated cultivation in times of drouth, a more vigorous and lively circulation of the remaining moisture in the soil is maintained, and with this increased moisture there is also an increase of the mineral food of plants brought up for the present as well as for future crops.

We know of some experienced cultivators engaged in the nursery business who always employ an extra force, and keep the horses, plows and cultivators in constant motion during seasons of drouth; and one unacquainted with the benefits of this operation, on visiting these grounds, would be led to suppose that they had been favored beyond their neighbors with repeated showers.

Numerous experiments have been made by scientific cultivators, which have afforded abundant proof that the moisture which rises from the earth below, caused by the evaporation from the surface, brings with it, in solution, lime in its various forms—magnesia, potash, soda, and whatever the subsoil may contain of this kind. This is a wonderful and wise provision of nature for maintaining in the soil all those essential ingredients for growing crops—a provision not always considered by the complaining farmer.

MANURING PASTURES AND MEADOWS.

We hold it to be nature's own way of enriching land, to apply the fertilizer, of whatever sort it may be, to the surface, what would be termed a top-dressing. We are aware this is debatable ground, and shall not presume to enter the lists, but simply give facts, as seen by us, and by all who, "having eyes, see."

The annual fall of leaves, decay of grass and other herbage, with the deposits caused by overflow, and the decay of the many forms of vegetation, are the sources of fertility and its annual increase.—The soil which retains any considerable portion, or all that grows upon it, ought to increase in fertility. For this increase there are two great sources—the growth above the soil, from the root, and the growth in the soil of the root itself. The one is an application of a fertilizing property to the surface—the other (the root) *in* the soil. The quantity of available plant food thus furnished by varied vegetable growth is widely different. Who ever thought of making a soil richer by growing *in it* a crop of wheat roots, while a crop of clover roots will increase its fertility wonderfully. The same is true of timothy, and, in fact, of any of the tough swarding grasses. All the farmer has to do to manure his soil well, is to produce a heavy, thick sward, the roots of which, when killed, in decaying, give out the constituent elements of a series of great crops, and leave the soil the better for being in grass.

But how to produce this thick sward, is the question, on a farm where the huge, wandering roots of the old forest trees are all decayed and extracted from the soil, in the form of "product," and sold—how to get a good coating of grass—a good, tough sward, and its adjuncts—where the soil is *run* poor, and will hardly grow either root or stalk. We answer, mix your grass seed, using varieties suited to the soil, and then serve the product as the "young dandies do their coaxed moustaches"—nurse, care for, treat with outward applications, &c., until it grows—and when once a stiff sward is formed, *make it rich by what you put on it*, and it will make you rich by what grows *in* and on it. That soil which will not, nor cannot, be made to produce a growth of roots for the support of plants, is worthless. We plow, hoe, and mellow the soil, that they may spread, and to these we should look, as the great source of fertility and means of fertilizing our soils. As the chief end of our labor, we should endeavor to make a root-growing soil—the root being the source of all or any share of success. How?

A poor soil may be fertilized by the application of manure spread upon it—plowed in, if you will—or by irrigation with water, bearing sediment. But a soil which had been rendered poor—poor is a better word here than sterile—by too long cropping from the same class of roots, we should seek to fertilize by change of product. And here we have to say, that a soil in grass, well swarded, is not poor, even if the crop is too thin and scanty to pay for gathering—any soil filled with grass roots is like a loaded gun—it is ready to make a report! But if it has been, as is the case with too many Western New York soils, cultivated in exhausting crops, or those the roots of which die each year, instead of carting on manure and plowing in to be thrown out and carted off again the next year in a spasmodic or forced, or *boughten* crop, we should adopt the seeding down practice, with red and white clover, timothy, and red-top, or blue grass, and then cart on the manure, what an increase of fertility we would observe. One bushel of plaster, and a few cords of manure, on even an exhausted soil, stimulate to the production of a paying crop, with the soil better instead of worse: for it is left filled with more cart-loads of fertilizing grass-roots than were

added to it in the top-dressing. Another, and another year, but adds to the triumph, and renders certain the victory.

From the above we are inclined to class farm crops as fertilizing and non-fertilizing. Grain and all annual sown crops, only requiring roots to perfect a few weeks' growth, return to, or leave in the soil, much less than is extracted, while grass-crops, continuing in a growing state for a considerable portion of the year, give a much greater proportionate return to the soil, and are less exhausting. Hence, one of the chief sources of fertility of the Western prairies, and also of the celebrated recuperative powers for the soil, is by depasturing with sheep.

We have witnessed much upon this subject in the practice of the Hon. A. B. Dickinson, who, twenty years ago, purchased several farms, more or less exhausted. His business being keeping sheep, and fattening, in pasture, cattle for the New York market, he kept these farms seeded in grass for several years, and, applying annually a bushel of plaster per acre, let them receive as a top-dressing the droppings of the animals and ungathered herbage. The result was, a sward was soon made which took "power" to draw a plow through it, and the productive capacity of the soil was increased fully three-fold. We have seen whole hill-sides which had annually been shorn of their product, until in his possession, and were so much exhausted as to be *seeded* with difficulty, after laying in grass five years, as pasture, broken and give a yield of oats worthy any soil in the State.—*Rural New Yorker.*

MANURE.

How often we hear it earnestly advocated that barn-yard and stable manure, whether green or rotted, should be plowed under; and how often, again, is it quite as strenuously contended that in either state it should be applied to the surface. The advocates of the former practice give as their chief reason that the volatile part is thus preserved; and those of the latter, that by applying it to the surface all its qualities are more available for the first crop, for which generally it is the most desired.

It has been pertinently asked, "when doctors disagree, who shall decide?" The young farmer just beginning for himself, or the mechanic who has laid aside his tools and entered the arena of agriculture, without any previous experience in farm management, is puzzled and vexed at these contradictions among his new associates, for he feels the need of definite and reliable information. With such conflicting views arrayed before him, well may he exclaim "when farmers of long experience shall disagree, who shall decide?"

Though it may sound somewhat anomalous, it may be said that both systems are correct, only not at the same time, on the same soil, or for the same crops.

The majority of evidence from actual experiment seems to be in favor of green or unfermented manure on the surface, only when it is that alone which is from digested food, or that is at least free from any considerable proportion of coarse ingredients, and is applied directly from the stable during winter or early in spring, when the frost and snow outside the heaps as they are left in the field prevents any material loss of ammonia into the atmosphere, and the ground under the heaps absorb it.

Very coarse unfermented manure, especially in a stiff, heavy soil, is most valuable plowed under, and the earlier it is done in spring the better, so that its slow fermentation may have time to act upon the soil as well as to add to its richness, and thus improve its condition for the seed. Such manure usually taken from the foddering yard, being a mixture of droppings, urine, and the refuse of corn stalks, hay and straw, is very similar in quality to a green crop of clover or buckwheat turned under, and should be treated in the same way. It then not only decomposes sufficiently to be in good part appropriated by the first crop, but acts upon the compact earth above and below it like yeast, making it light and porous, precisely upon the same principle that bread is raised—namely, by its process of fermentation. The soil thus becomes disintegrated and open for the admission of air, warmth, rain and dews. Many a stubborn clayey field has been made friable and productive by such treatment, after having been fall plowed and partially dissolved by several alternate freezings and thawings through the winter.

The most reliable testimony also makes it quite clear that rotted stable and yard manure is far better applied to the surface and well incorporated with the top soil by a thorough use of the harrow or cultivator, on tilled land; or if on meadow, applied in the fall or early in the spring, and spread evenly.

Green, or only partially decomposed manure, is indeed put on sometimes after the last plowing, when the ground is to be sown, with good results. But in this case the manure is in part covered in the process of covering the grain. A sowed crop also soon shades the ground, and prevents the manure in a measure from drying up. The loss is much greater if so used on a hoed crop. In the latter case the sun and atmosphere would dissipate and thereby destroy half of its qualities, the ground being from a fourth to a half covered and shaded on the average during the season; and it should therefore be plowed under where decomposition can go on, and the whole be saved for the use of the plant as the increasing growth demands it. It should be taken into consideration also, that cultivated crops, like corn and potatoes, root deeper than the fine grains, and need the manure as far below the surface as the furrow places it; while the finer grains do not root below the depth that partly or fully rotted manure is worked in by the harrow.

For root crops, barn yard and stable manure should be thoroughly rotted and intimately mixed with the soil to the depth of the furrow, turnips needing less depth than tap roots. If, however, unfermented manure or none must be used, it should be covered with at least four inches of soil for any root grown.—*Rural American.*

A family without prayer is like a house without a door: exposed to every danger, and offering an entrance to every evil.

A benevolent physician considers the poor his best patients, for God is the paymaster.

URINE FROM THE CATTLE STABLE---A REMEDY TOR THE APPLE-TREE BORER.

We cut the following artiele from a Vermont paper—*The Aurora of the Valley.*

"I desire to say something about the apple-tree borer, an enemy from whieh we have greatly suffered in our attempts to seeure healthy trees and good erops. So far as my own trees are eoneerned I think I have found a remedy.

I planted an apple orehard eighteen years ago, and the trees thrived very well for five or six years, when they began to droop and look siekly. Upon examining them I found the borer in great numbers, having done considerable damage, and some of them appeared to be past recovery. I went to work and took them out. After removing them I was about to apply eoal tar, but was told that it would be a worse enemy than the borer. I thought a while, and then decided to apply urine, from the eow stable, having tanks and applianees to seeure all this valuable liquid manure, as every farmer should have. I applied this copiously around the bottom of the trees and washed the trunks thoroughly. The result is, that I have not a borer in my orchard, and the trees have eompletely reeovered, and give me abundant erops.

I have been using this remedy for three years, and it has well repaid me for the labor required; and I think I can commend it confidently to my brother farmers, who will first carefully remove the borer and properly apply it, say twice a year, afterwards.

It will be seven years this spring sinee I planted five apple-trees. Three of the five were attacked by the borer, killing one, and the other two looking very sickly. I removed the worms, and upon the remaining four used the urine freely; they recovered, and bore this season very fine fruit."

PEA VINE HAY.

Editors Southern Cultivator:—I see several notices of Pea Vine Hay in your valuable paper, the *Southern Cultivator.*

January, 1859, I settled a plaee in the Mississippi Bottom, 14 miles below Helena, Ark. Not having land sufficient opened for a full erop, I had to make everything count possible. I sent down Peas, called Crowders—a very prolifie kind, and favorite in this valley. Had them planted in the eentre of each corn row, four feet apart. Owing to the very dry weather they were late coming up. When they did make their appearanee, however, they grew off finely, and they yielded far above ealeulations.

About the 1st of October, I started my hands to pieking, thinking I would save most of them. After gathering several days, the idea oeeurred to me that vines would make fine hay; so I ordered all hands to go to pulling up and winrowing as Timothy. In this eondition they remained near a week, having them turned over daily until entirely eured and fit to be housed. I had them hauled up and stowed under the shed of my gin-house. I wintered 10 head of mules, and as many cattle, and have plenty to feed on until I lay by my crop.

I consider the Peas equal if not more nutritious than corn, and the vines more so than Kentueky hay or fodder eombined. Stock, not at work, will do well on them. If worked, a little corn with Pea Vine Hay will keep them fat.

I believe nothing will pay better than ten aeres drilled in four to six feet rows, aceording to the strength of the land. Cut them up with hoes, and suffer to remain without winrowing them up, and they will eure quicker and better and less likely to be caught in rain, whieh I think would materially damage them.

Respectfully, &c.,

A Subscriber.

Tuscumbia, Ala., May, 1860.

MIXED STOCK IN PASTURE.

I noteed, some time ago, a good deal written about keeping a mixed stock on pastures. As I have been a keeper of stoek from very early youth until now, I venture to give my opinion. And first, I have found sheep to do very well amongst eattle, but eattle do badly amongst sheep. To prove it, let the farmer take the fodder left by the cattle, even when part of it has been trodden under their feet, and if the sheep are not very fully fed, they will see the sheep eat it up very greedily; then let him take what his sheep leaves, and offer it to his eattle, and he will find that they wont taste it, if they ean get anything else; or let him turn his milk eows in a sheep pasture, and he will find them fail in milk.—Cattle do well where horses pasture. In proof of this, every farmer must have seen that eattle will eat the litter of horses, even if fully fed, but horses wont eat what cattle leave, unless eompelled to do so. But horses and sheep will do well in some pastures, espeeially the horses. To prove this, let the farmer turn out the sheep from their yards, turn in his horses, and they will eat up all the sheep have left, even the litter around the racks.—*John Johnston.*

Manuring.—Some farmers put off the applieation of their stable and yard manure to wheat, until winter or spring. When this is done they are usually but poorly compensated for their labor. Winter wheat has two periods of growth: the first in autumn, and the second during the following spring and summer. The vigor of the erop, in its seeond period, generally depends very much on the healthful development of those parts of the roots whieh are natural to the first or autumn period. If, then, manure is ineorporated with the soil at the time of sowing, the impulse given to the wheat plants in autumn is almost eertain to eontinue until the erop is matured—unless some *physical* cause eomes in to prevent it, such as drouth or the depredation of insects. But when manure is spread upon feeble wheat in winter or spring it eomes too late. The basis of a good crop is not there. As well might you expeet to make a great ox from a stinted calf, as to make a good crop from sueh a ease as this.

No Mange in Black Hogs.—A writer in the *Southern Planter,* deseribing the different varieties of swine, says he never knew blaek hogs to have mange, while white ones are very subjeet to it, and sometimes die of it.

The Farmer and Planter.

COLUMBIA, S. C., SEPTEMBER, 1860.

HINTS FOR THE MONTH.

A severe drought and an excessively hot spell of weather, just after laying by the corn crop, throughout a large portion of the State, will make it a very difficult matter for many of us to "make both ends meet." There is no telling how many substitutes can be found until we try. The main thing is to begin in time and be in earnest.

Cotton Picking will begin to demand all our attention very soon, and while we have time save everything that will answer for winter food.

Save all the hay you can; look into all the nooks and corners of branches and corn fields; look to your pea-vines—save corn-tops, fodder and sorghum.

Sow down pasture lots in rye, barley or wheat; top dress your clover lots with one-half bushel each of plaster and ashes per acre.

Sow turnips still. The Red Top and Strap Leaf will do well sown any time in this month.

Complete your repairs about houses, lots and fences, and have everything in readiness for the event of the season—cotton picking.

Stock.—This is a trying time on stock—hogs particularly. Push them up with sorghum and clover, until your pea fields are open, and you will be safe.

HORIZONTAL CULTURE.

As this is the proper season for laying off hill-side ditches on stubble field, we commend the sensible and practical article on the subject from Mr. Wofford. Dr. Cloud fully endorses his right to instruct, and the success of his labors.

PEA VINE HAY.

Throughout a large portion of the State the corn crop has been cut off by a remarkable spell of dry and *hot* weather. It has been literally burned up. The late rains will add a few nubbins, and a great many pretentious looking ears, which, when husked, will be found cob.

Every effort should be made to secure all the nutritious food in our power; few better substitutes for corn can be found than the pea.

It is a very easy matter to cure them. Pull the vines, and after curing a day, put them in small cocks, three or four feet high; in a few days these cocks may be moved, placing two, or perhaps three, together (on top of each other), and they will be safe against all ordinary seasons, and furnish capital food for horses, cows, &c.

"GOING THE ROUNDS"

Among the many things, in the way of nostrums, which go the rounds of the newspapers, one will rarely meet with as good a joke as the following:

Cholic in Horses.—A correspondent says: "I see in your paper a communication upon the subject of 'Cholic in Horses.' I am ready to testify to the fact that I can give a remedy that will cure a horse in ten minutes, and will not cost you a cent (only the trouble), as follows:

You put your knee against the horse's forehead, and pull his ears a few times, and in less than fifteen minutes he will be up eating. I can get witnesses to testify to the fact. I have never known a horse to die to which the above remedy was given."

A. C. Ballard.

Smithfield, N. C., April, 1860.

Let no man, after this, complain of the want of a sovereign cure for Cholic. This beats chloroform, cold water, and smoking with rags. Is it mesmerism, or Rarey-ism, or Ealing-ism?

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Dogs and Bell Sheep.—An Indiana sheep farmer, in the *Stock Journal*, says that a number of sheep wearing bells, in any flock, will keep away dogs; he would allow ten bells to every hundred or hundred and fifty. When sheep are alarmed, they run together in a compact body, in which act all the bells are rung at once; which frightens the dog, or makes him think some one is on his track—so he leaves without taking mutton.

Here is another cork which has been going the rounds for some years past—a perfect fallacy, as the writer can testify. We drove up our flock to-day, and found one sheep missing, three badly worried—(one of which died,) the other two are the *bell* ewe and her lamb, and there were three bells in the flock. Last year we did not have a bell on, and did not lose a sheep. Don't put faith in bells—better put it in bullets—shoot every suspicious loafing "mongrel, puppy, whelp and hound, and cur of low degree" you find prowling about your sheep-walks.

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Have Lands not Cleared been Impoverished? By What?—Lands of the same quality cleared now will not produce nearly so much as the same quality would have done twenty years ago.—*Southern Cultivator.*

We find the above going the rounds, and clipped it from the *Rural Gentleman*, of Mississippi. Dr. P., of the *Rural*, agrees with the editor of the *Cultivator* as to the fact, and as to the cause; i. e., that the forest growth, the bushes and trees, exhaust the soil, and that "burning the woods, as in olden time, annually, would be a benefit." Now, we would very much like to know if the natural growth of a forest, drawing its support by roots, from depths far below the reach of *cultivated plants* and agricultural implements, spreading its leaves and branches throughout a far greater atmospheric range, and annually returning to the soil much of this material, besides shading it from the sun, and protecting it against

rains, grow annually poorer. How did it ever grow rich under such a process? And how can we improve a soil by our process if nature cannot by her's? And how, in the name of common sense, can burning the woods annually be a benefit?

Now, state the proposition. If lands of the *same quality* cleared now, will not produce nearly so much as the *same quality* would have done twenty years ago," the *quality* of the *land* being the *same*, the failure in production must be owing to something else. Have not the seasons changed wonderfully? Is not every crop becoming annually more uncertain? Are not planters in the habit of robbing their forests of the leaves annually? Do we not destroy more wood? And do we not feed upon the land a much larger number of domestic animals?

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The Apple-tree Borer.—It is well known that the apple-tree borer makes his attacks just at the surface of the ground, and if any one will take a piece of homespun and wrap it snugly around the body of the tree, and extending a few inches above and below the ground, it will be found a certain preventive.

This has been going the rounds, and has had numerous endorsements. Now, we know but too well that the borer does not make his attacks at the surface of the ground—he will attack in the fork, on the limbs, at any point most convenient.

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Effects of Soaking Seeds in Chemical Solution.—The following is an extract from the Transactions of the Highland Agricultural Society:

"I steeped the seeds of the various specimens exhibited, in sulphate, nitrate and muriate of ammonia, in nitrate of soda and potash, and in combinations of these; and in all cases, the results were highly favorable. For example, seeds of wheat steeped in sulphate of ammonia on the 5th of July, had by the 10th of August, tillered nine, ten, and eleven stems of nearly equal vigor; while seeds of the same sample, unsoaked and sown at the same time, in the same soil, had not tillered into more than two, three, and four stems."

The above has been going the rounds, for some months, of the Agricultural Press. It forcibly reminds us of some glorious visions of golden crops we enjoyed many years lang syne. About twenty years ago, one Franz Heinriek Biches, a German, announced the wonderful "discovery of a method of cultivating the soil without manure." The cost, he said, was very trifling—a shilling an acre—and the supply of substance used instead of manure inexhaustible. "It is not good," says Plato, "to push our investigations too far; the natural sciences find their limits, beyond which the mantle of Isis covers what is mysterious. Can any one reveal the nature of force, of life, of motion?" "But," says Mr. Franz, "the mantle of Isis is now, by this discovery, at length removed." "For," says he, "it is not the discovery of a mere crude substance for manure: but the result rests on a knowledge of the nature of plants, by which the vital power is increased in all respects, and their existence *elevated and ennobled.*" What is more wonderful, Mr. Biches produced "testimonials from practical men, in various parts of Germany."

Soon after, another German, Mr. Victor, announced a discovery by which "the same crop may be repeated on the same soil, though already exhausted; that all diseases of rust, &c., could be also avoided," &c., &c.

Next followed a Mr. Campbell, a Scotchman, who communicated his secret to the Highland Agricultural Society, of Scotland.

Mr. Campbell thought "that if the ultimate principles, of which the proximate constituents of most of the gramineous seeds are composed, could, by any possibility, be made so to enter the substance of the seed," he had found the Philosopher's Stone. He thought he had succeeded in doing it, and had grown remarkable crops on exhausted soils without manure. He steeped the seeds "in sulphate, nitrate and muriate of ammonia, in nitrate of soda and potash, and in combinations of these."

Mr. C. asserted that by thus soaking, "even without any manure, he could double the crop on any soil; while with the addition of manure, the increase would be *ten-fold.*"

About the same time, wonderful discoveries were announced in relation to "increasing the fertility of land by electricity."

It is not the least remarkable circumstance, connected with these wonderful discoveries, that testimonials from intelligent and practical gentlemen were exhibited, asserting, in the most positive terms, that, for a series of years, they had witnessed the results specified.

The greater the humbug the more readily will it become popular. Nor will it ever be otherwise, as long as intelligence is so little appreciated by the agricultural class.

You can find no shorter or surer way of undermining a planter's reputation, than by hinting that he reads books and takes an agricultural paper.

A man may be as ignorant as a Coolie, and as "miserly" as old Skinflint—he may cut down and wear out—but if he rolls out the cotton bags, his reputation is safe as a good planter.

Ridicule has shafts, and impertinence arrows, which, though against innocence they may be levelled in vain, have always the power of wounding tranquility.

The most direct method of determining horse-power—stand near and tickle his hind legs with a briar.

"HOW THEY DO IT."

"We tell him that, on old land, considered to have been worn out twenty years ago, there are numbers of men in Georgia, making, by the aid of these manures, more clear money than is made by men farming the fresh and rich lands of the South—making from 8 to 11 bags of cotton of 500lbs to the hand, and cultivating 30 acres to the hand, and 60 to the horse. There is no guessing about this. There is no puffing about it. We have no interest in guessing or puffing. We have no interest in any of these fertilizers. We state that which we have seen, and testify that we do know."

At the risk of being called officious, invidious, and prying into our neighbor's concerns, we copy the above paragraph from the *Southern Cultivator*. The *Cultivator* is read by a great many of our own readers, and for that reason we think proper to notice its teachings.

Our experience has not been like the writer's.—We have found very few planters, on the clay lands, who are satisfied that guano or super-phosphates will pay on anything but cotton, while many deny even that it will pay on that.

The mania for using guano, and other commercial fertilizers, has, for a year or so, been on the increase at the South, while it is evidently on the decline North and East of us. The manufacturers are making money—there is no doubt about that—and if the Georgia planters are making money by using it, they have either been fortunate in securing a better article, or it is peculiarly adapted to their soil. Making 8 to 11 bags of cotton to the hand, may or may not be judicious planting. It depends upon circumstances. We know a planter who, last year, made 14 bags to the hand. He was fortunate in having fresh and rich land, and in being able to cultivate 30 acres to the hand. Very hard work, but some people can manage to do a great deal more than others.

But 30 acres to the hand, and 60 to the horse, eclipses all the management we have ever had the good fortune to witness or even hear of. One acre is here considered a hoe hand's task. A hand, at this rate, would be 30 days hoeing over his work.

Twenty acres to the hand, is the highest average we can find among our most energetic planters.—Fifteen is generally considered enough.

But the point we want to touch is this: Is the largest number of acres cultivated to the hand or horse, to be the test of good planting?

If the planters of Georgia are growing rich by planting 60 acres per horse, they will very soon get out of land. Good land is too scarce in our surroundings to be worn out so rapidly.

If the introduction of improved implements, the application of guano and chemical fertilizers, is destined only to add to the productive wealth of the country by increasing the area of cultivated land, the doom of the South is palpable. We commend the following remarks of the famous Mr. Bakewell as not inappropriate:

"The late Mr. Bakewell, of Dishley, was not only an eminent agriculturist and breeder of stock, but a very wise and shrewd man, and his neighbors were in the habit of resorting to him for counsel and advice. On one occasion an old friend went to pay him a visit, for the purpose of explaining to him his position, and at the same time begging that he would recommend him what to do. He had lived all his life upon his own farm of 1000 acres; he lived very well, but he had never saved a shilling. He had three daughters, and the oldest was about to get married; he highly approved of the match, but the intended husband expected some portion, and he had nothing to give him. Should he mortgage his estate, or what should he do? Mr. Bakewell begged of him to spend the night with him, and promised the next morning to give him the result of his cogitations. Accordingly, the next morning, when they met at breakfast, Bakewell said, 'I have made up my mind what you ought to do: give your son-in-law one-fourth of the farm, keep the remaining three-fourths, and do not part with any portion of your capital and stock, and work the remaining three-fourths with it. Do it better than you have hitherto done, and your income will be rather increased than diminished.' His friend followed his advice; but at the end of two or three years, another daughter would be married, and the perplexed father again resorted to his friend Bakewell for advice, under this new difficulty. Bakewell cooly said, he had watched his proceedings, and seen their results; he must do in this case as he had done before; he must give up another fourth of his farm, and keep the original capital and stock. The father seemed somewhat puzzled, but as the first experiment had succeeded, he determined to try it in this case also. Last of all the youngest daughter was to be married, and, in utter despair, the poor father paid another visit to Dishley to explain his perplexity. 'Well,' said Bakewell, 'tell me honestly whether your income has diminished by having reduced your farm by one-half.' The father acknowledged he thought it had not. 'Then,' said Bakewell, 'you must give up another fourth of your farm, and keep your house and the remaining 250 acres for yourself, and, to tell you the truth, you will then have just such a farm as your stock, your capital, and your head are fit for, and will be a better and happier man than ever.' Old Bakewell used to tell this story with great glee, and declared his friend left as much stock and capital upon the 250 acres as he had ever had upon the 1000; and, as he believed, made a better income out of it. This may be a somewhat exaggerated statement, but of this I am sure: a small, well-cultivated farm, will make a better return than a large ill-cultivated one."

Build High Stables—That is, high between floors. Most stables are built low "because they are warmer." But such people forget that warmth is obtained at a sacrifice of the health of the animal and pure air. Shut a man up in a tight, small box. The air may be warm, but it will soon lay him out dead and cold if he continues to breathe it. If stables are tight, they should have high ceilings; if they are not tight, but open to admit cold currents of air from all directions, they are equally faulty.

MARKET GARDENING AND SOUTHERN RESOURCES.

Our readers will find a suggestive article on this subject from the Boston *Cultivator*. Our Boston freedom shriekers are beginning to find the shoe pinches in more places than one. We can be as independent of them as we please, if we resolve to be; and they are, thanks to their own fanaticism, taking the very course to force us to do it.

But on the subject of market gardening, we at the South have not yet begun to understand the first principles. With land cheap, and adapted admirably to the purpose, around many of our cities—with labor cheap, and such as we can control without a fear of "strikes," with a climate incomparably superior to the North, we can produce any quantity of the best vegetables and the small fruits (which always pay best), long before they can at the North.

During the last spring, in Charleston, it was almost impossible to get good vegetables, on account of the Northern demand. Was there ever a place more miserably supplied with garden vegetables than the Columbia market? Is there no individual about Columbia who has enterprise enough to make the experiment? Mark how rapidly the market gardeners about Charleston, New York, and Philadelphia, have made fortunes, and at what prices land sells in their vicinities for such purposes. What say you to a Silver Pitcher for the best managed market garden in Columbia?

INQUIRIES.

Will some of our subscribers give us answers to the following inquiries?

Mr. Editor:—After wishing my old favorite and companion, the *Farmer and Planter*, may receive ten thousand subscribers, permit me to inquire if any of its readers have ever used Salt and Lime as a manure for cotton and corn, mixed? If so, will they inform me, through your journal, in what proportion, and how much to the acre for cotton, and how much for corn; and in what way they applied it to those crops, and what has been the results?

A SUBSCRIBER.

Corn After Cotton.—Will some of the subscribers to the *Farmer and Planter* inform me how corn succeeds after cotton, where the cotton has been manured with guano, and how much guano was put to the acre on the cotton land? Wishing the *Farmer and Planter* all the success in the world.

INQUIRER.

[We shall be pleased to publish the result of our friend's experiment with stable manure, cotton-seed and guano, on cotton.]

ENGLISH AND AMERICAN PLOWS.

A very instructive extract, from the pen of Judge French, upon the comparative merits of English and American plows, will be found below. It is a matter of the first importance to every agriculturist to know what constitutes a good implement. It is certainly miserable economy to be plodding along in the old way because we have been used to it, if any better way can be found out. If one plow will do the same kind of work, with a power forty per cent. less than another, one might well be called stupid who would stick to the latter. There is no implement which admits of greater improvement, upon mechanical principles, and yet it has stood still longer than any other. The improvements lately claimed are legion, but what they are practically worth, very few have taken the pains to ascertain. Can our State Agricultural Society help us out?

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PLOWS AND PLOWING.

It is a fact well known to practical farmers, that the draft of the different plows, turning the same width and depth of furrow, in the same field, and performing the work in substantially the same manner, varies so much as to be plainly practicable in its effect upon the team. The use of the dynamometer, by which the power exerted upon the plow, or, in a word, the draft can be actually measured, has confirmed and made definite this point, which before rested upon conjecture, or mere estimate. It has thus been ascertained, by a trial of ten different plows, each of a different make from the others, that the difference in draft, in performing precisely the same work, amounted to forty-five per cent. The experiment was made in turning a furrow with each plow, nine inches in width by five in depth, in five different kinds of soil, and carefully noting the results as shown by the dynamometer. Taking the average of the five trials, it appeared that, while the plow of lightest draft required a power of 301lbs to work it, the plow of the heaviest draft required a power of 441lbs to perform precisely the same work, and the other eight required the greatest possible variety of power between these extremes.

At a trial reported in the transactions of the New York State Agricultural Society, for 1843, p. 61, it was found that the average of resistance, or the draft of twenty-four different plows, tested by the dynamometer, ranged from 298 to 483lbs, showing that more than sixty per cent. more power was required to move one plow than the other, in the work of turning a furrow twelve inches wide by six inches deep.

In another series of experiments, in the transactions of the same Society, for 1849, p. 559, in a trial of twelve different plows, we find the draft to vary all along from 290lbs to 493lbs, being a difference of seventy per cent. in performing the same work of turning a furrow of twelve by six inches. * *

The writer is not aware that any very reliable experiments have ever been instituted to test, by the dynamometer, the comparative draft of English and American plows. * * * *

The heavier the plow the greater the force necessary to move it along the surface. In a series of experiments

published by Mr. Pusey, in the English *Agricultural Society Journal*, it appears that the average draft of nine different plows, in an empty furrow, was in proportion to the weight as three to four; that is to say, that a plow of 300lbs weight required a force, as shown by the dynamometer, of 225lbs to move it when not at work. By the same experiments, it appears that the average draft of the same plows, working and turning a furrow nine inches by five, was a fraction less than double their draft in the empty furrow. Later experiments confirm this result; and it may be taken as demonstrated that, in the use of the heavy English plow, about one-half of the ordinary force of the team is expended in moving the implement when at ordinary light work! * *

Taking, then, the draft of the plow in the empty furrow, which may be called the surface draft, to be three-fourths of the weight of the implement, and the weight of English plows for common work to be that given me at the factory of Ransome & Simes, 280lbs, and that of the American plows to be 100lbs, we have the difference in the draft, 135lbs, or three-fourths of the difference in weight.

What do our Canadian friends, who use the English and American plows, say to these conclusions? The question is an important one. There may be advantages in the long handles and great weight, which, on account of the increased steadiness of the work, counterbalance the extra power required to draw the extra weight of the plow. Thus, a plow with wheels weighs heavier than one without, yet it has been shown by the dynamometer that, owing probably to its greater steadiness, it draws easier than the same plow without wheels.

For the Farmer and Planter.

HOW THICK SHOULD COTTON BE LEFT ON THE BED?

Mr. Editor:—Noticing an editorial in your journal, some time ago, inviting inquiries on any subject connected with agriculture, which would be answered either editorially or by contributors, I accept the invitation, to inquire how thick cotton should be left on the bed, and what may be considered a good stand?

It seems to be the custom in some of the Lower Districts, to leave two stalks standing in a hill, about twelve inches apart, believing they gather more from the acre, while most of the farmers in the upper part of the State leave only one, and about the same distance apart, or about the width of a common hoe, believing this to be the proper stand for cotton.

As it is now most too late in the season to try experiments, you will oblige some of your subscribers in St. George's Parish, by letting us know your opinion, and we should like to have the opinions of your contributors on the subject.

A SUBSCRIBER.

Wood ashes and common salt, wet with water, will stop the cracks of the stove and prevent the smoke from escaping.

Half a cranberry bound on a corn will soon kill it.

For the Farmer and Planter.

DOGS, SHEEP RAISING, &C.

Mr. Editor:—Of late there has been a great outcry against all dogs, because sheep are killed, and we are even taxed for all the dogs of our negroes on this account. If the object of this tax is to raise money, I am afraid that it will prove a failure, and the sheep will fare no better. I cannot help thinking that there is a simple remedy for sheep killing, within the reach of every one who finds sheep worth keeping. I have kept sheep, and largely too, ever since I began to plant, and up to this time cannot remember having lost 6 sheep altogether, and yet my negroes have kept dogs without stint, as I find them useful in destroying raccoons which devour much corn, and opossums, which have a sneaking fancy for poultry. My plan has always been, as a general rule, to have my sheep penned every night, either with my cattle or by themselves. The few sheep that I have had killed have been mostly killed by dogs brought from the City, or from where they have never seen sheep. I cannot remember ever to have had one sheep killed by any dog raised on the plantation, either by myself or any negro. During the earlier years of my planting life, I kept a flock of about 50 sheep on a plantation not very far from Barnwell C. H., in a tolerably thickly settled neighborhood, which were penned regularly on the public road, and about 100 yards from my house, and with no one to protect them during the night, and yet I cannot recollect that I ever lost one. I now keep over 300 head of sheep on plantations in two different Districts, where dogs are owned by the planters as well as myself, and negro dogs are plentiful, and yet I cannot remember the day when I have ever lost one sheep by dogs.

It is an old saying, and generally, I believe, found to be true, that "what is worth doing is worth being well done." If sheep are not worth this little trouble they cannot be worth keeping. Certainly the meat, wool and manure, which they furnish, ought to pay handsomely for even more trouble, and the manure alone they could be made to manufacture, ought to pay for this little extra trouble. They give little, if any, more trouble to drive them up in the afternoon along with the cattle than to drive the cattle without them, and therefore I have never had any one to drive them except my cattle minder. If they were housed under some shed, even of the roughest kind, and fed occasionally, especially during very severe or very rainy weather, with cotton-seed, they would prove still more profitable; but even without any such extra care, I know of no kind of stock which makes a quicker or better return. The flesh is among the most wholesome and nutritious known in agriculture—far preferable to pork or bacon for

white persons—the wool an indispensable, even in our mild climate, and the manure is fully equal in value to that of any other animal on the plantation, receiving no better treatment.

On limited pastures, where every horned beast is kept, that the pasture can support, an equal number of sheep can generally be added without any injury to anything, and with very material advantage to the planter, and I am quite surprised to see so very few planters keeping sheep, and cannot understand how they can supply their tables without them, unless they are content with bacon and greens. I have nothing to say against bacon and greens in their proper time and place, but I cannot consider them suitable food for delicate females and children. As there are different breeds of sheep possessing very different qualities, it can do no harm for me to give my opinion, founded on very limited experience it is true, but much more extensive reading, as to which breed of sheep is best suited to the planter.

If a planter wishes to keep sheep for his own purposes, I have no hesitation in recommending the Merino or Grade Merino as the best suited to his requirements. They are best adapted to our hot climate and scant pastures—their flesh is the most palatable, and their wool furnishes the warmest and most durable clothing, whether for our families or our negroes. Many persons suppose that, being a small breed, they therefore furnish less meat and wool than the larger breeds; but this I think a great mistake, for it is true that a smaller animal can give less meat and wool than a larger one, yet consuming so much less food many more can be maintained on the same amount of pasture, and thus the returns equalled. Next to the Merino I think that the South-Downs are best suited to our circumstances, and combine the next good qualities. If a planter wishes to raise sheep for sale in the markets of our towns, &c., I would hesitate between the South-Downs and the larger breeds, such as Leicesters, or Bakewell's, or the Cotswolds, but when the object in view is the double purpose of supplying his own table and the butcher, I would unhesitatingly recommend the South-Down.

I have, for several years past, been in the habit of sending my wool just as it came from the sheep, unwashed and full of burrs, to be made into cloth for my negroes, and with entire satisfaction. The burrs are taken out without charge, and when the wool is washed ½ cent per yard is charged for washing.—The cotton is furnished and the cloth delivered at 12½ cents per yard for plain kersey, and 16 cents for twilled and stouter—the latter quite warm enough far the men on our cotton plantations, and the former answering for the women and larger children. I have tried the Richmond Factors, in Augusta, and the Columbia Mills, in Columbia, with entire satisfaction, and can, from experience, recommend both.

Yours, &c., C.

For the Farmer and Planter.

WHO ARE OUR BENEFACTORS?

Mr. Editor:—"Do you know," said a neighbor farmer to us the other day, "what makes the lice on cabbage?"

Some fly, we suppose, lays the egg, was our reply.

"Yes, and I can tell you the fly—it is the 'Lady Bird.' If you will examine your cabbage you will find them on it."

This honest fellow had slaughtered thousands of those little insects who were working faithfully to destroy the very insects he was complaining of.

There are several varieties of Lady Bird—bright red, and yellow with black spots on the wings.—They always lay their eggs on the same leaf where the plant-louse lays hers, so as to be ready for operations.

Take care of the Lady Birds. Among our benefactors too, may be numbered "old grandaddy long legs." He is a mortal enemy to many insects which infest delicate plants, and the queer old fellow, with his eyes on his back, is very apt to see his prey in his wanderings through the green house. The Dragon Fly and Lace Wiug Fly are also great benefactors, as they prey greedily upon plant lice.

The child's "Devil Horse" is an invaluable locomotive—a real cut and thrust fellow among pestiferous insects, and should always command our protection.

The Dragon flies, the Snake Doctors, as children call them, and some other insects, deposit their eggs in pools of water, and it is a little remarkable that they keep the water pure and wholesome, while water without such insects will become putrid.

There are several members of the Beetle family—the Grave-digger, who digs a hole in the ground, and buries all the putrid substances in his reach—the Dung-beetle subsoils your cow-pens for you in summer, and deposits your manure below the surface.

There is a large family of small flies called Ichneumons (wasp-shaped), whose peculiar province is to puncture the eggs of other insects, and lay their own eggs in them, thus destroying some of the greatest pests of the farm.

A distinguished Entomologist says, that in England there is an insect which accompanies that pest the Wheat Midge, and keeps him in check. It does not exist in this country, and on this account the depredations of the Midge have not been arrested

The increase of insects injurious to vegetation is becoming a serious evil, and we shall begin to learn something more as to who are our enemies and who our benefactors.

MANTIO.

A hot shovel held over varnished furniture will take out white spots.

For the Farmer and Planter.

PREAMBLE AND CONSTITUTION OF THE KING'S MOUNTAIN AGRICULTURAL SOCIETY.

We, whose names are hereunto subscribed, do agree to form ourselves into an association, for the purpose of improving our knowledge of agriculture, in its various branches, and for that purpose do hereby agree to be governed by the following

CONSTITUTION.

ARTICLE I.

Sec. 1. This Society shall be known as KING'S MOUNTAIN AGRICULTURAL SOCIETY.

ARTICLE II.

Sec. 1. The Officers of this Society shall consist of a *President*, *Vice-President*, *Secretary* and *Treasurer*.

Sec. 2. It shall be the duty of the President to preside over the deliberations of the Society, submit all questions, inspect and announce the result of all ballotings, or other votes, give the casting vote when a tie may occur, appoint all committees, and assign one Essayist for each regular meeting; announce two subjects matter at each regular meeting, in writing, connected with the objects had in view in the formation of this Association, for deliberation at the next regular meeting; deliver all premiums awarded by the Society, and perform such other duties as the Society, or his station, may require.

Sec. 3. It shall be the duty of the Vice-President to preside and discharge all the duties of the President in the absence of that Officer.

Sec. 4. It shall be the duty of the Treasurer to collect and safely keep, all the funds that may be due to, or in the possession of, the Society, and to make all necessary payments, take and give receipts for the same, either by a credit or entry in his book, or otherwise; and to perform all other such duties as may be required of him, or incident to his office, and fully and particularly report all his transactions to the Society, at each annual meeting, and at any other time he may be required to do so; and at the expiration of his term of office, pay over to his successor in office, any funds remaining in his hands.

Sec. 5. It shall be the duty of the Secretary, to keep a record of all the proceedings of the Society, read the minutes of the preceding meeting, upon the Society being called to order, preserve the roll thereof, have the possession and care of all the books, and other records of the Society, and turn over the same to his successor, at the expiration of his term of office, and perform such other duties as may be required or that may be incident to his office.

ARTICLE III.

Sec. 1. The Officers of this Society shall be elected by ballot, at each Annual Meeting, and shall remain in office for one year thereafter, and until their successor shall be inducted into office. A majority of all the votes cast, shall be competent to elect.

ARTICLE IV.

Sec. 1. All applications for membership in this Society, shall be passed upon by a vote of the Society; and if the applicant shall be received, he shall be admitted to membership by signing the roll, and paying into the Treasury *fifty cents*.

ARTICLE V.

Sec. 1. The Society may, at any regular meeting, enact such BY-LAWS as may be deemed necessary and proper for its government.

ARTICLE VI.

Sec. 1. There shall be an Annual Meeting of this Society on the second Wednesday, in each November. The other regular meetings shall be determined by a vote of the Society, but the President shall have power to call extra meetings, when he may think it necessary to do so, but there shall be at least four regular meetings in each year.

ARTICLE VII.

Sec. 1. This Constitution may be altered or amended by a vote of two-thirds of the votes cast at any regular meeting.

Adopted, April 14th, 1860.

A. HARDIN, *President*.

For the Farmer and Planter.

CURE FOR SADDLE GALLS, SORE SHOULDERS, AND OLD ULCERS ON HORSES AND MULES.

The bark of the *Gordonia Cassianthus* (*Loblolly Bay*), which is found in the lower portions of Carolina, Georgia and Florida, boiled so as to extract the *tannin*, and applied as a wash, whenever the animal is unharnessed, will effect a cure in a few weeks.—It abounds in *tannin*, and when applied and rub on, foams like the best soap. I also found it a valuable application to an ulcer on a negro's leg, curing it speedily.

A. G. SUMMER.

BLIND STAGGERS.—*Mr. Editor:*—Many of your readers will be glad to learn that there is an effectual remedy for that formidable disease in horses, called "blind staggers." The following recipe I have just received from a reliable gentleman in Georgia, who has suffered great losses from this malady among his horses and mules, and who has lately tested its efficacy, in many instances, with entire satisfaction:

Recipe for Blind Staggers.—Gum-camphor, 1 oz.; whisky or brandy, 1 pint; dissolve. Dose—1 gill, in a half-pint of gum-arabic, flax-seed, or other mucilaginous tea, given every three or four hours; seldom necessary to give more than three doses. The horse must be kept from water twenty-four hours. Never bleed in this disease. Wrapping the legs in woolen cloths, and keeping them bathed in water, as hot as can be borne, seemed beneficial in connection with the above recipe.

By inserting the above in your valuable journal, you will oblige many readers. J. F. MOWE.

Florida Home Companion.

A cranberry bound on a corn will soon cure it.

MARKET GARDENING.

The market gardeners, within ten miles of the city, complain bitterly of low prices this season. Their land stands them in hand at a high price, whether purchased by the acre, or was inherited. The taxes are high. Fertilizers are high. Labor is high. Of the two latter, raising vegetables requires much.—Hence, to prepare the soil, put in the seed, or to transplant young plants started in hot-beds, demands much skill and persistent labor, in order to have early vegetables ready for the market.

Three steamers a week have been running this season between Norfolk, Va., Charleston, S. C., and Savannah, Ga., and Boston. Consequently, the market has been well supplied with vegetables as soon as they were ready for use at the most Southern port, and the result is just what might have been anticipated—low prices for early vegetables, produced at much expense by the market gardeners near Boston.

As an offset to the importation of early vegetables from the South, is the exportation of the same kinds later in the season—probably not all to the same extent—but of others, as potatoes, probably more. So it will be seen that the market gardeners hereafter, must calculate on their Southern competitors in the Atlantic cities and the large inland towns. It strikes us, that such competition will tend to dampen the ardor of market gardeners near our large Atlantic cities. Perhaps not. We should like to hear from them on this subject. Will the one who sowed 75lbs of cabbage seed last spring for "greens," inform us what, in his opinion, the prospects of market gardeners are, near Boston, in view of Southern importations to the same extent in the future as during the early part of the present season?

High rents, high prices per acre, high cultivation and high fertilization, involving much labor, have, down to the present, been justified by high market prices for early vegetables. It is quite evident that these prices cannot be kept up as heretofore, if three steamers a week are to run between Southern ports and Boston, bringing in market-garden products to the extent this may be easily done. It seems to us that the result must be, that capital, labor and skill, thus invested, must seek other employment, and consequently lands hitherto used for this purpose must depreciate in value. Observation, conference and reflection have forced us to this conclusion.—The same may not be true of all of these smaller fruits and vegetables, but of some, it will undoubtedly be found so, as of the potato, peas, and of some others, perhaps, in the largest demand by hotels and boarding-houses. It is a subject of deep interest to all who have invested in this kind of business.

Market gardening is a pleasant employment to persons of skill and industrious habits—and especially so, if they have been bred to it. But it requires a vast amount of labor and care, and skill in marketing and collecting, as well as in producing, to make it pay well. There is no doubt it will always be in requisition to supply a portion of the consumers, but whether the larger portion will buy, must depend upon the price fixed by Southern importations, as facts already show. The tendency is, as all can readily see, to equalize prices and to give the farmers back in the country a better chance.—*Boston Cultivator.*

Ribbons of any kind should be washed in cold soap-suds, and not rinsed.

SCARCITY OF FORAGE IN THE SOUTH---A REMEDY PROPOSED.

The scarcity of forage for several years, and especially at this time, calls loudly for some remedy.—The steady increase in the growth of our great staple, and the proportionate decrease in the growth of corn, our chief dependence for forage, is the principal cause of this scarcity; and as nothing seems likely to be cultivated by the majority of our farmers to as much profit as cotton, we can scarcely expect a change for the better unless we can find a substitute for corn, which is a very uncertain crop in our hot climate. I think there is a substitute at our command, if we will make use of it. The substitute I propose is the Winter Oat. This oat when sown early in the Fall, say October, is the most reliable crop that we can raise in this part of the country, and the yield is almost fabulous. It was grown extensively in this and adjoining counties the past Winter.

There are several varieties of this oat, some of which are but little better than the Spring varieties; but the variety which is about to supersede all others is a yellow oat, grows very tall, has a soft, tender stalk, and tolerably wide blade; the head ripens several days before the stalk, thus rendering it valuable for food, as it can be cut when the grain is ripe, and the stalk and blades will cure, if left on the ground a few hours before binding, and be nearly as good as corn fodder. When sown in October they will grow tall enough on almost any land that will produce rye. They ripen with us about the middle of June, and I think when our farmers learn the true value of this oat we will no longer be compelled to pay from a dollar to a dollar-and-a-quarter per bushel for corn, and equally as extravagant prices for hay and fodder.

JAS. McBRIDE,

[*in Darlington Flag.*

PLOWING IN GRASS SEED.—O. L. Dow, of Nelson, N. H., writes to the *New England Farmer*, that "his way" of seeding down to grass has been, for the last twelve years, to plow in all his grass seed. He thinks it does best when sowed before the first plowing—at any rate before the cross plowing. He would plow it in deep; it will come up in time, and being deep rooted withstands drouth that will destroy a shallow corn crop, as well as resists the effect of frosts, or heaving out. He adds: "I have sown on five different farms in this way, and on every variety of soil, from gravelly ledge or black muck, and never failed to get a fair crop of grass when seeded in this way."

To receive the greatest benefit from lime, it must be kept as near the surface as possible. The reason is this: its weight and minuteness give it a tendency to sink; and after a few years of cultivation, a large portion of it will be found to have gone beyond the depth of its most efficient action. Hence it is advisable to spread it on the ground after plowing; then harrow it well in, and allow it to remain in grass as long as good crops can be had. When the lime is settled down below the reach of the common plow, the subsoil plow will prolong its effect, by enabling the atmosphere and the roots of plants to penetrate the subsoil likewise.

Oats are the best of all foods for animals, especially the horse.

Horticultural and Pomological.

WILLIAM SUMMER, EDITOR.

MONTHLY TALK WITH OUR READERS.

The work for this month may be continued as in the last, but the season will be more favorable for sowing, as with the cool nights and heavy dews insects are less destructive. Gardening in the South will now commence. Some of the greatest delicacies for table use may be obtained from quite late sowings. We can speak most positively in regard to turnips.—Both the early and round improved varieties will succeed, if sown during this month, and arrive at maturity in a season when there happens to be no early frosts. Special pains should be taken to enrich the soil, for in this way we secure two objects—the more rapid growth of the plant, and a sweeter and more tender vegetable. We suppose it is generally known that the more rapid the growth of this as of other vegetables, the more mild and tender they are to the taste. Cabbages, Onions, Radishes, Spinach, Cauliflowers, are all much more delicate in flavor, and agreeable to the palate, when grown freely and rapidly, than when their growth is stinted and slow. All the vacant places in the garden it will be found good economy to sow with turnips. There will be at all events the pea, and early potato ground.

Onions may be transplanted, and it will be found advantageous to set out at least a portion of the crop.

Early Beets and Carrots, and Parsnips, may be sown, and make good early crops.

Cabbages will require good workings, and as a preventive of the destructive cabbage-worm, keep up for a few hours, every evening, a light in the garden. With this precaution, we have kept our cabbages free from worms for years past.

Sow Lettuce and Spinach, and rake over the ground, and it will give an abundant supply of salad for winter use.

This is the proper season for multiplying plants by layering. The mode of doing this is, to spade up the ground lightly around the plant to be layered. Then select a branch of this year's growth, and near a bud, which will be buried, cut in through the bark, and then turn the knife upward towards the point of the branch, and slit it up a little way. Then make a small ditch in the earth, and bend the branch into it, so that the place cut will be on the bottom of it; pin it down with wooden pegs. Bury this part two or three inches, and see that it is kept moist. Roots will start from the point that has been cut. In the spring the branch thus rooted may be separated from the parent stock, and set out to begin life on its own strength. Grapes, roses and shrubs are all multiplied in this way.

Prepare your strawberry beds for setting out new beds the last of the month. The ground should be thoroughly spaded and enriched. Do not neglect to make preparation for this crop, so certain—and as it furnishes a delicious and wholesome supply of early fruit, no family should be without it. We give a descriptive list of the best varieties. The advantages of planting in autumn is that a very good crop is secured the first spring.

Keep the Garden clear of weeds—save all seeds carefully, and of the best quality.

In thinning out Ruta-bagas transplant missing spaces.

Many persons having a few Grape-vines will be desirous of making some wine. This crop has been abundant, and will encourage every one to plant a few choice vines the next season. We give brief and simple directions for making wine. Select the grapes and carefully pick out the rotten or decayed berries; then mash and press out the juice, and put in demijohns or jugs, and set in a cool place. The vessels should be full, and kept full by filling up with some of the juice reserved for that purpose.—All impurities will work off, and in four or five weeks the fermentation will be complete. The vessels may then be stopped, and a little air occasionally given, until cold weather, when the fermentation will have subsided. Then bottle, cork, and seal close. In a dry season, the juice is rich in saccharine substance, and a superior wine can be made without sugar. If the grapes ripen during very seasonable weather, it will be best to add a little sugar to the juice when first put in the demijohn.

For the Farmer and Planter.

TO MAKE BLACKBERRY CORDIAL.

I have seen several receipts for making the wine, but do not recollect ever seeing any for making cordial, which I think is far superior to the wines:

To two quarts of blackberry juice, add one pound loaf-sugar, half an ounce nutmeg, half an ounce cinnamon, pulverized fine, quarter of an ounce cloves, quarter of an ounce of allspice, finely pulverized.—Boil all together for a short time, and when cold, add one pint of fourth-proof French Brandy.

I do not think there is anything better for children troubled with diarrhœa, and all other diseases of the bowels, generated in the spring season, by eating fruit or otherwise. As it is too late now for blackberries, perhaps this will be ready for *next spring*.

WHO CAN ANSWER?

I would like very much to know how to kill Tetter-worm in the inside of my hands. I have been trou-

bled with it about six or seven years, and I do not know of any better course to pursue than to make the *Farmer and Planter* the medium of seeking for the information needed.

I have been thinking how to keep cider sweet all the winter, and have been making some inquiries about it with but little success of obtaining much information on the subject. Some say it must go through a boiling process; but, however, I am about done making it, as apples are rather scarce, though I expect to make a few more barrels of it next season, and would like to know something more about it then. Being fearful of wearying your patience I will stop right here.

Yours truly,

A. J. HAIL.

FLORA OF THE SOUTHERN UNITED STATES.

Containing abridged descriptions of the Flowering Plants and Ferns of Tennessee, North and South Carolina, Georgia, Alabama, Mississippi and Florida, arranged according to the Natural System, by A. W. Chapman, M. D.; the Ferns, by Daniel C. Eaton, New York. Ivison, Phinney & Co. 1860.

This book supplies a want long felt by all Southern botanists. We never have had a complete Flora of the Southern United States. Walters' and Elliott's works were local, scarcely extending beyond the limits of South Carolina.

Pursh, Michaux, Nuttall, and others, of the early botanists, described many of our plants, but the field of the more newly settled Southern States was almost unexplored in their day.

We are indebted to these early pioneers for the work which they accomplished so well—that of clearing the way and laying the foundation—but there was much still left for discovery, for revision, and for amendment. The more modern work of Torrey & Gray, which was intended to be a complete Flora of the United States, was discontinued at the middle of the second volume, some ten or twelve years ago; and the *Prodomus* of DeCandolle, and the *Enumeratio Plantarum* of Kunth, both universal Floras, which commenced respectively at opposite ends of the system of classification, and would, in meeting each other, have furnished a description of all known plants, have both shared the same fate.

Gray's *Manual of Botany for the Northern States*, supplied this want there, and extends as far south as Virginia; Chapman's *Flora* commences there, and extends to our southern limits on the Atlantic coast.

Dr. Chapman has been studying our plants for 30 years past, and has had ample means for preparing himself for the execution of his task. The work has already received the commendation and endorsement of our best botanical authorities, and comes to us as a complete and reliable exposition of the present state of the science.

The species and genera of the older authors have all been revised, and such changes and transpositions made as the present state of nomenclature makes necessary, whilst a large number of new species, not hitherto enumerated in any systematic work, have been added.

The *Flora* of Florida (the residence of the author for many years) has been specially elaborated for the first time. The peculiarity of the *Flora* consists in the large number of sub-tropical forms not found elsewhere in the United States. The western and southern parts of Florida belong to the Bahaman and West Indian province in geographical botany, and the student who is familiar with the names of American plants will find many strange-looking things as he turns the pages of this book. These geographical provinces of distribution present some curious and interesting features to the student, and furnish one of the points of contact between the sciences of Botany and Geology. With respect to the lower Cryptogamous plants, the province reaches further northwards; and Lichens and Fungi of sub-tropical forms extend their range into South Carolina.

We note ninety-six genera of plants, not found in the United States out of Florida, and of these sixty-two are trees or shrubs. Besides these, there are a large number of species peculiar to that region, and belonging to genera which have representatives more northward. In running our eye over to look, we note among the Cactaceæ two species of Cereus and two of Opuntia, peculiar there; also three species of Passion flower, and one species of Capsicum (Pepper plant). Florida also furnishes another species of Macbridea (a genus dedicated by Elliott to Dr. Macbride, his worthy coadjutor in botanical pursuits), making two new species known. The Fig (Ficus) is represented by three species, one of which, like the famous Banyan-tree of the East, has aerial roots.—Another species of that curious parasite Epidendrum, the Evenosum Lindl, is found in Florida, and eight species of Tillandsia, of which our "long moss" is the only representative in this State.

But though Florida has received now, for the first time, due attention, the other regions have not been neglected. All the known plants of the Southern States are here described. It may be mentioned that the Spruce Pine, *Pinus Glabra*, Walt, now has its place, for the first time, in any systematic work on Botany, since the publication of Walter's Flora. As it is undoubtedly a true species, it must hereafter be retained. It has lately been found also in Alabama, by Buckley, and Dr. Chapman thinks it is in Florida, among the low hammocks of that State.

As evidence of the progress in botanical discovery, we note, among the Cyperaceæ, that whilst Elliott describes but thirteen species of Rhynchespera, and fifty species of Carex, Darby eleven species of Rhynchespera and fifty-one species of Carex, Chapman's Flora contains thirty species of the former and seventy-four of the latter.

In conclusion, we wish to recommend this book, especially to those interested in botanical studies, as by far the most complete and reliable Southern Flora ever published. It will be appreciated at once by all botanists as a standard work, and should take the place, in schools and colleges where this science is taught, of all those compilations which have been hitherto used for want of a better.

This book, in connection with the standard elementary works,* written by Professor Gray, of Cambridge, expressly for beginners and students, will furnish the best apparatus for study in reach of our Southern schools.

*1. "How Plants Grow."
2. "Lessons in Botany and Vegetable Physiology."
3. "Structural and Physiological Botany."
Published by Ivison, Phinney, & Co., New York.

The volume is a handsome octavo, of upwards of 600 pages, from the University press of Cambridge, gotten up in the style of Gray's *Manual*, with every mark of care in its preparation and execution. It is gracefully dedicated to Rev. M. A. Curtis, of North Carolina (and formerly of this State), to whom, with Prof. Gray, and others, the author acknowledges much assistance during the progress of his labors.

H. W. R.

THE QUINCE.

The Quince is a small, irregular growing tree, and usually attains the height of twelve or fourteen feet. It bears its fruit on shoots of the same years growth. The flowers are large pink and white, and the fruit of an orange color, austere in its raw state, with a peculiar, pleasant, high fragrance. When loaded with fine, ripe fruit, there are few trees more highly ornamental.

It is one of the very best fruits for preserves, marmalades, sauces, syrups, jellies, &c., either alone or with other fruits, to which it imparts its fine flavor. The liquid, after washing the fruit with water, and standing for twenty-four hours, makes a good wine with sugar. Medicinally, the quince is strengthening, giving tone to the stomach. Baked with sugar, they are superior to apples, and dried quinces are frequently mixed with apples, in making pies, to improve their flavor.

It is easily propagated by layers and cuttings.—When by cuttings, they should be taken from the tree early in January or February, and planted in an upright position, in a light, deep, and moist soil. A shaded location is to be preferred; and they should be planted at least ten inches deep, and only a small portion left above the surface. The young trees are used extensively as stocks for propagating the dwarf pear trees which are coming so generally into use, as they are admirably adapted to the garden, requiring but little space, and yielding large crops of fruit in a few years.

The soil for the quince should be deep and rich, and should be kept well cultivated; without this, good and large fruit cannot be produced, and, in conncetion with this, a special manuring of salt is of vast benefit, both to this tree and the plum. The salt should be spread early in spring beneath the trees, so as to half conceal the ground, Common manure, without salt, will seldom grow quinces of the finest size and of the most perfect form, nor will an unimproved or poor soil bear heavy doses of salt. The trees should be pruned and trained into regular standards, branching from within two feet from the ground; after they arrive at a bearing state, they require verry little pruning. The quince is properly a garden fruit, requiring the best prepared soil. In planting it with a view to orchard culture, the distance should be from ten to twelve feet. If the ground has been previously subsoiled and well manured, the young trees will come into bearing in three or four years, and continue, with proper care, to produce crops for many years.

In most cases, quinces will produce the same from the seed, with a slight varying in form. The apple and pear-shaped being only varieties in form. The Orange quince is the best for general purposes. The Portugal is later, and although not so handsome in outward appearance, the flesh, when preserved, is of a red and beautiful color, making it a favorite for preserves and jellies. It is, however, a shy bearer.

SELECT LIST OF STRAWBERRIES.

Albany, or Wilson's Seedling.—Fruit large; broadly conical; deep crimson; flesh of a bright ruby color, and best flavor; the most productive, early and desirable variety we have grown; continues long in bearing; flowers perfect, and the best fertilizer that can be planted.

Longworth's Prolific.—Flowers perfect; fruit large, often very large; regular; roundish; rich; light crimson; with a delightful, high, brisk flavor.

McAvoy's Superior.—Flowers pistilate; fruit very large; deep glossy crimson; deep scarlet; very juicy, with an exquisitely rich vinous flavor; an indispensable variety in every garden.

McAvoy's Extra Red.—Fruit very large, but too acid for most palates; excellent for tarts and jellies; and a good substitute for the cranberry.

Boston Pine.—Requires deep rich earth and good space to bring it to perfection; fruit large; deep rich sherry red on the exposed surface, with a sprightly agreeable flavor; staminate and productive.

Hovey Seedling.—Fruit large; deep shining scarlet; flowers pistilate; and wiih a good fertilizer this variety produces immense crops.

Moyamensing.—Large deep crimson, with a pleasant and excellent flavor; ripens gradually; very productive with a good staminate.

Hooker.—Large; conical; regular; deep crimson—almost maroon; of a rich fine flavor; flowers perfect, and an excellent productive variety; promises to be one of the best varieties.

Crimson Cone.—Fruit medium to large; regular elongated conic; flesh firm, sprightly; rich acid flavor; a good market variety, and excellent for preserving.

Walker's Seedling.—A most productive late variety; fruit large, deep crimson; juicy; with a fine, fresh, rich flavor.

Burr's New Pine.—This fine variety is only suited for the amateur; the vines subject to die out; flesh tender, sweet, and palatable without sugar.

Scarlet Magnate.—A very distinct and excellent pistulate variety; one of the largest and best varieties; berries bright scarlet; juicy, sweet and well flavored; very solid; and uniformly of fine size; productive, and promises to be one of the best market varieties; plant hardy and vigorous, with large, broad foliage, and small flowers.

A Mother's Love.—Children, look in those eyes, listen to that dear voice, notice the feeling of even a single touch that is bestowed upon you by that gentle hand! Make much of it while yet you have that most precious of all good gifts—a loving mother.—Read the unfathomable love of those eyes, the kind anxiety of that tone and look, however slight your pain. In after life you may have friends, fond, dear, kind friends, but never again will you have the inexpressible love and gentleness lavished upon you which none but a mother bestows. Often do I sigh in my struggles with the hard, uncaring world, for the sweet, deep security I felt, when of an evening, nestling to her bosom, I listened to some quiet tale, suitable to my age, read in her tender and untiring voice. Never can I forget her sweet glances upon me when I appeared to sleep; never, her kiss of peace at night! Years have passed away since we laid her beside my father in the old church-yard; yet still her voice whispers from the grave, and her eye watches over me as I visit spots long since hallowed to the memory of my mother.—*Macaulay.*

The Angers quince is a more vigorous and upright grower, and is admirably adapted for working the pear. The Japan quince, (*Pyrus Japonica*,) of which there are two varieties—the Scarlet and the Blush—are beautiful shrubs, and are highly ornamental, flowering in mild weather frequently at Christmas, and should have a place in every shrubbery.—*Southern Agriculturist*, 1853.

BLIGHT ON PEAR TREES.

Messrs. Editors:—Having seen from time to time, in your valuable paper, enquiries in relation to the pathology and remedies for the disease known by the names of Fire Blight, Pear Blight, Frozen Sap Blight, &c., I have thought proper to trespass upon your columns, by giving my observations upon this malady, if, on perusal, you find them worthy the attention of your readers.

Having lost many pear trees for several years past, I have bestowed much attention to the subject, and the following is the result:

I am satisfied the disease is caused by an insect, who punctures the bark on the trunk and larger limbs, at those points where it is changing from the smooth to the rough state. The first appearance of the disease is in the form of a dark spot on the bark, as though a small portion of gunpowder had been burned there. If not arrested, this spot continues to enlarge, the bark sinks down to the wood, and in time, is surrounded with a crack or seam which separates it from the healthy part. So soon as this spot occupies any considerable portion of the trunk or limb, the leaves upon the ends of the twigs turn black and die, as does also, more or less of the diseased limb or twig itself. This latter manifestation is entirely sympathetic, being caused by the virus being carried to that part, by the ascending sap, from the diseased part below, as is shown by the leaves dying uniformly upon the same side of the tree that is diseased below. Hence it follows, and experience bears me out, that whenever the leaves commence to die, the bark upon the trunk or larger limbs is somewhere diseased. This may be set down as a certainty, and even where the tree refuses to grow you will be almost certain to find the small plague spots upon it. I have frequently found them not larger than a pea, when the general health of the tree was affected only so as to stop growing.—On cutting into the small spots, the bark is discolored and dark, with two punctures, generally about one-eighth of an inch apart, and by the side of each other; occasionally, there is but a single puncture, which does not reach down in the early stage to the cambium or wood, but reach only into the cellular integument; if this affected part is removed with a knife, the wound immediately heals over, and the health of the tree is restored. I have, within two years past, cut the bark from young pear trees nearly to half the circumference of the trunk, and uniformly with good results; in fact, I have not lost one tree since I have adopted this course of treatment. When the disease has progressed so far that the leaves and small twigs have turned black, I consider the case hopeless; because it must have affected the trunk or limb too far to recover. Cutting off the affected leaves and twigs does no good whatever, as the impregnated sap is carried to some other portion, which, in like manner, dies.

The remedy is, to cut away with a sharp knife, the diseased bark, wherever you can discover the dark colored spots before described. If you can remove all the discolored portion without injuring the liber or inner coat of the bark, so much the better, as the wound sooner heals; but should it be necessary to go down entirely to the wood, and on all sides to the healthy bark, do so without fear; for unless this is done, it does little, if any good. I have an English Jargonelle which has been attacked five or six times, and which I have as often saved by using the knife upon the trunk. This tree has a soft, thick bark, as also the D'Anjouleme, and some others, which makes them peculiarly liable to attack. I am now watching to discover the insect who perpetrates the mischief, if possible, as I think this is about the period of puncturing the trees.

I have seen, for a few days past, a green insect, about a half inch in length, eating the leaves of the pear trees. It belongs to the grasshopper tribe, as he springs from branch to branch very nimbly, and takes especial pleasure in hiding behind the twig on which he is setting, whenever you approach too near. He is a real artful dodger, and not easily caught; but he may not be the culprit, yet good may result by keeping a wary eye upon him, as his conduct is very suspicious.

I have never seen apple trees attacked with this disease, although they are liable to exhibit the same symptoms as do pear trees, viz: the dying of the terminal twigs; but it is caused by another disease, which may be described at another time.

To those cultivating pears, I would say, examine the trunks and larger limbs about three times in the course of the season; say spring, summer, and beginning of autumn; and, as before directed, cut away all the diseased and discolored spots. A little Shellac Varnish, applied to the wound, will cause it to heal more readily than if left naked.

Truly yours, &c.,

J. Van Buren.

Southern Agriculturist, 1853.

Preserving Peaches.—Mr. Edward Baneroft, of Athens, Ga., has brought the art of preserving peaches in their own juice to great perfection. In the first place, he takes much pains to grow very fine fruit, making the cultivation of fruit trees a part of his business, in which he is very successful.—Having superior ripe peaches, a little hot syrup, made from double refined loaf-sugar and their own juice, heated with the pealed peaches, prepares them for the most perfect sealing in tin cans or glass bottles. His rule is, one pound of sugar to two of fruit. We did not know before we drank it of his make, that the juice of delicious peaches is capable of yielding a valuable *wine*. Preserved without fermentation, rich peach juice may be used at the table in various ways, and give satisfaction every day in the year. It should be bottled in the way described by a recent correspondent for putting up new cider, to keep it sweet indefinitely. Having recently visited Mr. B.'s grounds, and having confidence in his skill and integrity, we cheerfully commend his nursery and fruits to public patronage.—*Southern Field and Fireside.*

Scotch snuff, put on the holes where crickets come out, will destroy them.

A bit of soap, rubbed on the hinges of doors, will prevent their creaking.

URBANISTE PEAR.

For orchard culture, the Urbaniste is one of the very best pears. In its delicious flavor, it compares more nearly with the Doyenne or Virgalieu, than any other fruit, and has, when in perfection, a delicate perfume peculiarly its own. Its handsome size and appearance, and remarkably healthy habit, should make it a favorite in those districts where the Virgalieu does not succeed. The tree is a moderate but healthy grower, and though it does not begin to bear, when worked on the pear stock, as soon as some of the new varieties, it yields abundant and regular crops, and promises to be a long-lived and hardy variety. It is of Flemish origin, and was first introduced into this country in 1823.

Fruit of medium size, often large, obovate, inclining to pyramidal, smooth, pale yellow, grey dots, and a few russet streaks; stalk stout and inserted in a well marked depression; flesh white, (yellowish at the core,) melting, buttery, very juicy, of a rich, delicious, peculiar perfumed flavor; ripens in September. It flourishes double worked on the quince stock.

A bit of glue, dissolved in skim milk and water, will restore old crape.

How to Keep Cider Sweet.—*Mr. Editor:*—As this is now the season of the year, when the people of the South are having cider made for their family use, which become too sour to use in a few days, many of our southern citizens no doubt would be glad to know how to keep it perfectly sweet any length of time. I have made that discovery, and take great pleasure in making it known to them through your valuable paper.

I procured a flat bottomed boiler, placed some thin boards at the bottom to keep the hot iron from breaking the glass bottles; I filled the bottles with sweet cider just from the press, up to the neck, and then filled the boiler with cold water.

I then brought the water to a boil, and as soon as the cider swelled so as to run over the mouth of the bottles, I took them out and poured out enough to make room for the cork, drove it in, and sealed it with rosin. I take particular care that the cider is not heated, so as to injure its flavor. I have some that was put up in 1856, which is as sweet as when put up, and almost clear. Since then I have put up cider in demijohns and stone jugs, which make them equal to glass. Cider preserved in this way is preferred by most of our visitors at our dinner table to our best domestic wines. J. H. Dearing.

Field and Fireside.

From the Gardener's Monthly.

HOUSEHOLD GRACES.

BY JOSEPH AMRAM.

The genius of a nation is not made up by virtues and vices alone, but also by propensities, habits, and manners. A happy blending of characteristics, all different from each other; and, in fine, in themselves, is required to raise that nation in the eye of God and men.

Valor, proficiency in the arts, trade, education, wealth, patriotism, do not indicate the standing of a people when taken singly; and any nation excelling in any of them too much, is either still in the confines of primitive weakness or relapsing back into it. History, ancient and modern, furnishes plenty of illustrations.

It takes, then, many qualities to make a man, and a nation, to approach our ideal of civilization; and the softer qualities have as much to do with it as the sterner ones. Virtues and graces, must, in our model nation, run hand in hand through its character.

The love of flowers is, no doubt, one of such graces; belonging as it does to that harmonion of things which makes and marks the geniality of a people.

We do not speak of *floriculture* as an art; we rather speak of a feeling and its practical expression. It also is the one in which we in this country are sadly deficient. "Take it altogether," we said the other day to a friend, just home from his travels, "what has struck you most abroad in the gardening line?" He paused a moment, and then replied:—"*The sale of pot-plants in Germany.*" We were then told that there the usual stands in the markets, and at the corners of streets, and the itinerant wheelbarrow gardeners, which we find almost everywhere; but in addition to them, there were in every city, stores, more or less numerous; more or less well-stocked; more or less expensively fitted up; in which pot-plants and cut flowers were sold. Such an extensive sale of course rests on the demands of the masses; on the general custom of having a garden for every family, not exactly in the place where gardens "ought to grow," but pocket editions of gardens, in the shape of plants blooming gloriously inside of the windows during winter, and outside of them, on little stages, in summer. During the fine season it occurs sometimes that a pot gets dropped or blown over on somebody's hat or head, which suffers accordiugly; but such accidents are not half as frequent as camphine ones with us.

"The poorer the people," so my friend went on, "the more they seem to cling to their plants, and perchance, their Canary bird. It looks like the purest enjoyment of the soul, left her in and against adversity. I did not fail to noticc that Ericas, Tree Ferns, Begonias, etc., were of the aristocracy, whilst Geraniums, Callas, Hydrangea hortensis, Aucuba japonica, and others, dwelled with the plebians.—Still I often saw a fine Camelia or an Orange Tree in the window of the poorest—no doubt one of the poor woman's treasures.

Mignionette and Myrtle were, as they ought to be, with high and low, associating with all the grades and tempers of society. Pots, too, like their owners, dress there more or less expensively, that is, they are put into china-ware, porcelain, gilt or painted Fayence, etc., which serve, just like dress, to hide—the clay. Plants once drawn into the family-home get petted by the ladies. It is they who provide for them stands of all shapes and materials, hang them up in baskets and vases; now decorate the iron balcony into a living one, where the beholder fain looks for the iron, then again trail ivy on an arch between the windows, and make a bower of it."

"And what sort of a people are the Germans at home?" I naturally inquired.

"A pleasaut sort," he said, "satisfied with little, and industrious, nevertheless. Drawing the enjoyments of life from rational sources, especially from the feelings. Mellow in intercourse, with a turn for thinking, and a profound veneration of art; and, you see," my friend concluded, "they are excellent customers for gardeners."

As my friend spoke, two ideas started parallel to each other. One was somewhat in this way, "wish we had the same chance here;" the other, "wonder if rowdyism canuot be sunk in pot plants?" Hard on the heels of these two eame the third, "what can be done for it?" And this is the drift of this article.

How can we raise the love of flowers in the masses? It needs no demonstration what benefits all the world, and florists in particular, would derive from it. If we are not out of the baby-hood of a nation, as our orators tell us time and again, then we are at least, as individuals, full grown men and women. And if, as a nation, we can cultivate the sterner virtues only, which we are told belong to national iufancy, then at least, as individual beings, and as members of a "home," we might cultivate in us and around us, more of the *graces* of civilization.

Will our Horticultural Societies lead the way?

[We think, ourselves, that many of our Horticultural Societies might do more than they do to encourage gardening amongst the masses. At present they reach only the wealthier portion of the community, and commercial gardeners.—Ed.]

A MEDICAL PRESCRIPTION.

Dr. Abernethy did almost as much good to his patients by his sharp wit as by his medicines, and innumerable stories are told of his dry humor. Here is a good one we do not remember to have seen before:

His prescription to a wealthy patient was: "Let your servant bring you three or four pails of water, and put it into a wash-tub; take off your clothes, get into it, and from head to foot rub yourself well with it, and you'll recover."

"This advice of yours seems very much like telling me to wash myself," said the patient.

"Well," said Abernethy, "it is open to that objection."

Cleanliness.—Compare the dirtiness of the water in which you have washed, when it is cold, without soap, cold with soap, hot with soap. You will find the first has hardly removed any dirt at all, the second a little more, and the third a great deal more.—But hold your hand over a cup of hot water for a minute or two, and then, by merely rubbing with the finger, you bring off flakes of dirt or dirty skin.—After a vapor bath you may peel your whole self

clean in this way. What I mean is, that by simply washing or sponging with water you do not really clean your skin.

Take a rough towel, dip one corner in very hot water—if a little spirits be added it will be more effectual—and then rub as if you were rubbing the towel into your skin with your fingers. The black flakes which will come off will convince you that you were not clean before, however much soap and water you may have used. These flakes are what require removing. And you can really keep yourself cleaner with a tumbler-full of hot water and a rough towel and rubbing, than a whole apparatus of bath and soap and sponge, without rubbing. It is quite nonsense to say that anybody need be dirty. Patients have been kept as clean, by these means, on a long voyage, when a basinful of water could not be afforded, and when they could not be moved out of their berths, as if all the appurtenances of home had been at hand.

Washing, however, with a large quantity of water has quite other effects than those of mere cleanliness. The skin absorbs the water, and becomes softer and more perspirable. To wash with soap and soft water is, therefore, desirable from other points of view than that of cleanliness.

LATE SOWN VEGETABLES.

Some of the greatest delicacies for table use may be obtained from quite late sowing. We can speak most positively in regard to turnips. Both the round and the flat turnips may be sown at any time in July or August, and we have known it to come to considerable maturity in a season in which there were no early frosts, when sown in the first week of September. Special pains should be taken to enrich the soil, for in this way we secure two objects—the more rapid growth of the plant, and a sweeter and more tender vegetable. We suppose it is generally well known that the more rapid the growth of this, and several other vegetables, the more mild and tender they are to the taste. Cabbages, onions, radishes, spinach, cauliflowers, are all much more delicate in flavor, and agreeable to the palate, when grown freely and rapily than when their growth is stinted or slow. Cucumbers and celery may also be added to the above named, as being much milder when grown rapidly than when of slow growth. Some of these may be raised late in the season, as well as turnips, so as to supply the table with the delicacies of spring and summer until quite late in the fall and winter.

By the end of August, and in the course of September, there will be vacant places in the garden and field, which it will be good economy to sow with turnips. There will be, at all events, the pea and early potato ground; these, and other such patches may be sown with round or flat turnips, and thereby we will be making provisions both for our family and our stock. What we do not use for the table will be well relished by our cattle; and cows which have a tolerable supply, will not dry up so early as cows that have no green feed.

To Protect Children from Burning.—Children who are permitted to wear cotton garments in winter, should have them rinsed in alum water. This is but a little trouble, and will render their clothing much less likely to take fire.

SCIENTIFIC vs. PRACTICAL INSTRUCTION.

The following testimony of Liebig, as to his famous school at Giessen, is worth considering in these days of practical science:

"The technical part of an industrial pursuit can be learned; principles, alone, can be taught. To learn the trade of husbandry the agriculturist must serve an apprenticeship to it; to inform his mind in the principles of the science, he must frequent a school specially devoted to this object. It is impossible to combine the two; the only practical way is to take them up successively. I formerly conducted at Giessen, a school for practical chemistry, analysis, and other branches connected therewith, and thirty years' experience has taught me that nothing is to be gained by the combination of theoretical with practical instruction. It is only after having gone through a complete course of theoretical instruction in the lecture hall, that the student can, with advantage, enter upon the practical part of chemistry. He must bring with him into the laboratory a thorough knowledge of the principles of the science, or he cannot possibly understand the practical operations. If he is ignorant of these principles, he has no business in the laboratory. In all industrial pursuits connected with the natural sciences, in fact, in all pursuits not simply dependent on manual dexterity, the development of the intellectual faculties, by what may be termed school-learning, constitutes the basis and chief condition of every improvement. A young man, with a mind well stored with solid scientific acquirements, will, without difficulty or effort, master the technical part of an industrial pursuit; whereas, in general, an individual, who is thoroughly master of the technical part, may be altogether incapable of seizing upon any new fact that has not previously presented itself to him, or of comprehending a scientific principle and its application."—*Liebig's Letters on Modern Agriculture.*

Hot Water for Insects.—Your mode of cleaning insects from plants and flowers by water heated to 130°, is an excellent one. I tried it on rose bushes that were full of rose Aphis, and other kinds of insects, and I found it cleaned them perfectly. I poured it on the bushes with a watering-pot. I have tried tobacco, sulphur, and many other things, but have not found anything as good as the above remedy.—P. Arnold, *in Gardener's Monthly.*

Broiled Mutton-chops.—They are done exactly like steak, except that, from their bones, they will not bear beating. They are served in their own sauce, or with an appropriate sauce.

Some one has beautifully said: "The water that flows from a spring does not congeal in winter, and those sentiments of friendship which flow from the heart cannot be frozen in adversity."

In winter, set the handle of your pump as high as possible at night, or throw a blanket over it.

A gallon of strong ley, put in a barrel of water, will make it as soft as rain water.

If your flat-irons are rough, rub them well with fine salt, and it will make them smooth.

Domestic Economy, Recipes, &c.

For the Farmer and Planter.

BRANDY PEACHES.

Select firm Peaches, (Clingstone are the best,) not quite ripe, throw them into boiling ley, and allow them to remain only long enough to remove the skin by wiping with a coarse towel; then throw them into cold water, wipe off the skin with a coarse towel, then throw again into cold water, and let them remain while the syrup is being boiled. Weigh out a half pound of refined sugar to each pound of Peaches, add half-a-pint of water to each pound of sugar, and boil these together to make the syrup. Boil the Peaches in this syrup until a straw can easily penetrate to the stone. Take out the Peaches and put them into jars; mix equal parts of this syrup and preserving brandy, or other spirit, and pour this over the Peaches, filling the jars and covering the Peaches—then seal up. They improve by being kept a while.

Cherry Cordial.—Fill demijohns or other vessels with ripe Cherries, (our common wild cherry is much the best,) then fill these demijohns, &c., with spirits of any kind—good whisky answers quite well. Let them remain from 9 days to 9 weeks, or even more if more convenient. Pour off all this spirit and fill up with water, allowing the water to remain on the Cherries 2 days. With this water, when poured off, make a rich syrup, of which add one-half to one pint to every quart of the spirit first poured off; boil them up together once, and bottle off. This also is improved by being kept a few weeks.

Corns.—Having suffered many years from this little torment, I have tried every remedy, promising either relief or a cure, not omitting the most severe, but thus far without success. Possibly Dr. Ealing might have cured me, but I could not believe it, therefore never gave him a trial. My corns might be termed moist corns, as they grow on the last joint of the little toe and the opposite side of the next toe, so that they press against each other, and moisture or grease renders them excessively painful. The best palliative that I have ever tried is, to keep them well pared, and every morning putting between the corn one or two thicknesses of common leaf tobacco, made soft by moistening; and when this cannot be done, from any cause, a small piece of cotton, wool, or one or two thicknesses of fine cotton or linen rag.

Sponge Gingerbread.—Five eggs, 1 quart of molasses, half-pint of melted butter, 2 tablespoons of ginger, 2 teaspoons of salaratus in a cup of buttermilk, mix in flour to the consistency of cake batter.

Preserving Fruits in Cans.—To one pound of the fruit, I put a quarter of a pound of white loaf-sugar. Put them over the fire together. Let them boil up once. Then have your cans in a pail of water as hot as possible without breaking them—have them also filled with water of the same temperature. Let them remain so for a few moments. Then, while the fruit and sugar are boiling hot, fill the cans while they are setting in the water. They must be filled to the very top. Then put the cover on, and seal with the cement. After filling them, take them out of the pail of water, and put them away to cool.—After they are cold, turn them over on the cover side, and let them remain so until you wish to use them.

I have saved fruit in this way for three years; and have now strawberries and peaches that are as fresh as though they were picked this year, which are a year old.

I always use the glass cans, for I consider them more pure than any other kind.—*Country Gentleman.*

To Destroy Nut-Grass.—In one of your papers you inquire if any of your subscribers can tell how to get rid of nut-grass. I will tell you what I have heard my father say, but only on condition that you do *not* publish my name, as I do not care to see myself in print.

My father is a practical farmer of long experience, and sustains a high reputation as a planter.

He says he has only had nut-grass in small quantities, and has never failed to get rid of it by enclosing the portion of the land by a rail-pen and putting hogs in it. He has no doubt, if this plan is followed, every nut would be destroyed, though it might take, perhaps, three or four months to get rid of them.

Field and Fireside. McD.

Broiled Fowls or Pigeons.—The former are cut open—called spread eagles—down the back, and then pressed quite flat under a strong plate. After this, the inside is wiped, and they are laid on the gridiron over rather a slow fire, (for broiling,) with their insides downward first, to keep in the gravy by hardening that surface. When brown, turn them upward, and continue till they are well done. Pigeons are generally done whole, but may also be split. They are served with pickled mushrooms and made sauce, or with pickled eggs and parsley and butter.

Broiled Steak—Should be cut from a well-kept rump, and they are generally liked about three-quarters of an inch thick. Most cooks beat them well with a rolling-pin for ten minutes, but, if the meat is of good quality, and the rump has been well-kept, there will be no necessity for this. Just before finishing, rub a lump of butter over, and lightly dredge with pepper and salt. Pickles and scraped horse-radish make a good garnish, and for sauce suit your taste.

Tomatoes for Table.—Take good ripe tomatoes, cut them in slices, and sprinkle over them finely pulverized white sugar, then add claret wine sufficient to cover them. Tomatoes are sometimes prepared in this way with diluted vinegar, but the claret wine imparts to them a richer and more pleasant flavor, more nearly resembling the strawberry than anything else.